

#49

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Stanley Kubrick

"If God did not exist, Man would be obliged to invent him."

Voltaire

the ultimate trip

A look back at the greatest science fiction film of all time

paul taglianetti

It's almost here. The very year immortalized by director Stanley Kubrick on film. Released in 1968 to theatres around the world, **2001: A Space Odyssey** is thirty two years old this year, yet its

visual power and profound insight into the human mind and the wonders of the infinite have not diminished. It is a film mired in controversy to this day and has been the subject of constant speculation and debate. The origins of this odyssey can be traced back nearly forty years to a then unknown independent film maker who had not yet quite reached his plateau of critical and financial success as a director...

Stanley Kubrick was born in July, 1928 in the Bronx section of New York. An average student in standard academics, Kubrick excelled at photography and had an insatiable curiosity about the world around him. Eventually, at the age of sixteen, he landed a job for *LOOK* magazine after snapping a photo of a newsstand owner on the morning following FDR's death. He soon sold the photograph to the magazine for \$25, and ultimately worked for the journal for

nearly four years, travelling around the world. It was during these years as a photojournalist that he developed his skill and passion for photography. In 1950, through a former friend, Alexander Singer, he came in contact with a film production company interested in creating documentaries under a running time of ten minutes. Kubrick created **Day of the Fight**, an eight-minute look at the world of middleweight boxer Walter Cartier. He followed up that film with another documentary, **The Flying Padre** (1951), about a New Mexican priest who travels to Indian villages in a small *Piper Cub* plane. Ultimately, Kubrick would embark on his first feature, **Fear and Desire** (1953) with money invested by relatives. A surreal film about a small platoon of soldiers in an unspecified war caught behind enemy lines, **Fear and Desire** clearly showed Kubrick's ability to photograph stark and daring images.

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Stanley Kubrick had just enjoyed a critical and popular success with the socio-political black comedy **Dr Strangelove** (1964) in which the filmmaker tackled the extremely controversial subject of nuclear war. For his next project he would choose another hot topic: space exploration. He approached MGM President Robert H. O'Brien with an idea in collaboration with Arthur C. Clarke about man's first contact with extraterrestrial life. Kubrick decided to base the story on Clarke's short story *The Sentinel* (written in 1948 and originally titled '*Sentinel of Eternity*'). The short story concerns a lunar expedition in the year 1996. A geologist on the mission notices a

Although Kubrick came to disown the film (it is not currently available on video), it contains some beautiful photography and an early appearance (as an actor) of film director Paul Mazursky.

From there Kubrick ventured into the genre of film noir. **Killer's Kiss** (1954), which was funded from money acquired by family investors, showed Kubrick's assured hand as a photographer and storyteller. Kubrick followed it with **The Killing** (1956) (co-scripted by hard-boiled crime novelist Jim Thompson). Later Kubrick scored a major critical hit with **Paths of Glory** (1957), considered by many film critics to be the greatest war film ever made. It was through his association with *Path's* lead actor Kirk Douglas that Kubrick was brought on to **Spartacus** (1960) to replace director Anthony Mann who was dismissed three weeks into shooting. The success of **Spartacus** allowed Kubrick a certain amount of creative freedom away from the Hollywood system and for his next project he decided to shoot in England. **Lolita** (1962), based on the Vladimir Nabokov novel, also proved to be a major critical and financial success and it was

glowing object at the top of one of the nearby peaks. He eventually discovers that this bizarre, pyramid-shaped artifact is of extraterrestrial origin and placed on the lunar surface as a beacon to alert its creators when man has mastered space travel and reached the moon. Clarke was considered one of the finest literary masters of science fiction as well as speculative science-fact. As early as 1945 Clarke postulated the invention and deployment of global satellites used primarily for communication purposes. In this early phase, Clarke and Kubrick would spend nearly two years developing *the Sentinel* into a screenplay. The working title for the film would be **Journey Beyond The Stars**, although the actual title of the film went through several iterations. A few that were thrown out were **Planetfall**, **Tunnel to the Stars**, and **Universe**. Kubrick eventually settled on the title, **2001: A Space Odyssey**, echoing the literary masterpiece *The Illiad*. Kubrick initially set up the 2001 production company, called *Polaris*, in New York, but O'Brien's support eventually moved the entire operation to England when shooting became imminent.

Pre-Production

"Had I been present at the creation, I would have given some useful hints for the better ordering of the Universe."

—Alphonso the Wise (c. 1270)

Kubrick became known for his acute sense of accuracy and impeccable attention to detail and this was evident to nearly everyone involved in the process. Apart from writing and directing his own films, he is renowned for overseeing every aspect of the production: from designs and storyboards to editing and sound mixing, advertising and color timing of prints. As this project would be his most technically challenging to date, he immediately enlisted the services of scientists and designers who could bring a sense of realism to the film's visuals. Chief among these individuals were Frederick Ordway III, special consultant for the *Alabama Space and Rocket Center* and

industrial and scientific designer Harry Lange. Lange and Ordway were currently working on a book for *Prentice Hall Publishing* called **Intelligence in the Universe**. Serendipity would bring the two together with Clarke and Kubrick in New York to discuss the film project. Kubrick also became aware of Ordway and Lange's work with famed rocket scientist Wernher von Braun at the *NASA Marshall Center* and utilized their talents and insights for the film's massive technical requirements. Ordway, Lange and several other members of the crew would spend considerable time at Kubrick's behest visiting industrial and governmental institutions all over the United States, gathering scientific and technical data on space travel. It was during the pre-production period that Lange and Ordway developed much of the film's vehicle technology such as the *Orion* shuttle and the *Aries* orbit to lunar surface craft.

Kubrick had viewed every science fiction film he could get his hands on (Alexander Korda's **Things to Come** was recommended by Clarke, but Kubrick disliked the film intensely), primarily screening for content but also to examine

continued on page 13...



2001: a space odyssey

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2001: it was personal...

2001: a Space Odyssey is that rarest of cinematic experiences; a movie with such power that it is capable of touching the emotions of each person viewing it in an *entirely different way*. Ask any genre cinema buff what effect the movie had on them at that first wondrous viewing and they will invariably recall the event in intensely personal terms, struggling to find words worthy of describing the impression the film made on them. More than any other feature on any similar or disparate subject, **2001** tears at the subconscious and speaks to the individual *individually*.

In my case that first viewing of **2001** caused me to wander around for the rest of the day in a kind of woolly-headed fog. I don't remember arriving home. I know I watched TV later but nothing on that so-dim-by-comparison screen in the corner would register. That night I slept fitfully and intermittently, my semi-slumbering mind—almost but not quite released from consciousness—constantly relaying and replaying looped scenes and super-realistic images from the film. The next day I felt drained and disturbed. Not the standard payback one might hope for following a visit to the cinema, yet **2001**, to this day, remains my number one all-time favourite movie.

The behind-the-scenes stories and special miniature features contained in this issue have, at times during their compilation, taken me directly back in feeling and awe to that matinee viewing so many years ago. They have also added to my knowledge through the little known facts and rarely seen photographs on display. Almost everything in the way of props and models from the film was destroyed following **2001's** lensing in order to prevent appearances in other productions that might lessen the film's impact. Despite that, in these pages you will find images that have rarely—if ever—been seen before. I hope this special collector issue takes you back to that premier viewing too, evoking the same emotional response you felt when first embarking on *the ultimate trip*.

Sincere and special thanks go to our team of correspondents and model makers for their hard work and razor-sharp research in compiling this issue; to the original production team responsible for bringing **2001** to the big screen and, of course, to Arthur C. Clarke and the late Stanley Kubrick for presenting an awesome vision of space travel and mankind's potential that is not so much a film as a visual feast, emotional rollercoaster and spiritual wake-up call.

Mike Reccia (Editor).

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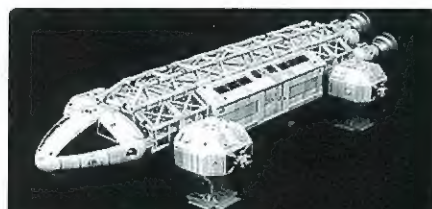
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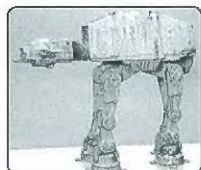
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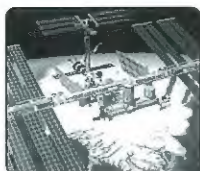


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1:8. Injection plastic. Limited
re-issue of Aurora kits.
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NEW 5095
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1:8. Injection plastic.
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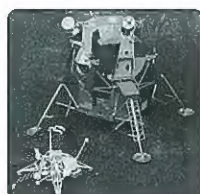


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components and solar panels.
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1:100. Mixed media. £ 79.50

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LUNAR MODULE**

1:72. IP. £ 6.00

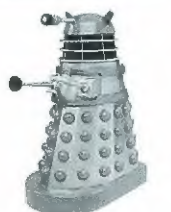
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1:25. GRP and WM parts.
New re-tooled version with
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'68 MUSTANG**
1:25. IP with metal body.
November. £ 20.00



NEW **BULLITT
'68 MUSTANG**
1:25. IP with metal body.
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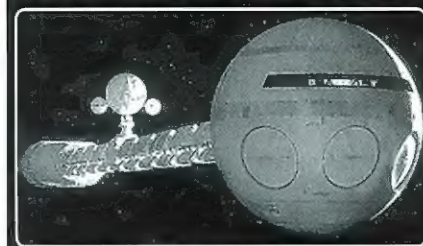
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2001: a space odyssey



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Command module 8" diameter. A two piece spine rod
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Limited edition of just 25!
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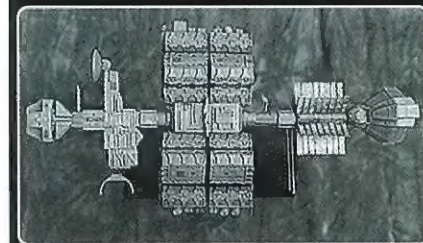


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24" long. GRP. Decals. Superb detail - the world's first
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LEONOV (2010)**

10" long. GRP with etched brass accessories. £ 49.50

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18" long. GRP. In scale with Leonov. £ 49.50

SPECIAL OFFER - FOR THIS ISSUE ONLY!

Buy the Leonov and the Discovery for only... £ 90.00



NEW **PLANET X
DEWEY & HUEY (Silent Running)**

1:8. GRP. (Each) £ 29.50
SPECIAL OFFER! Buy both Dewey & Huey kits for only £ 55.00

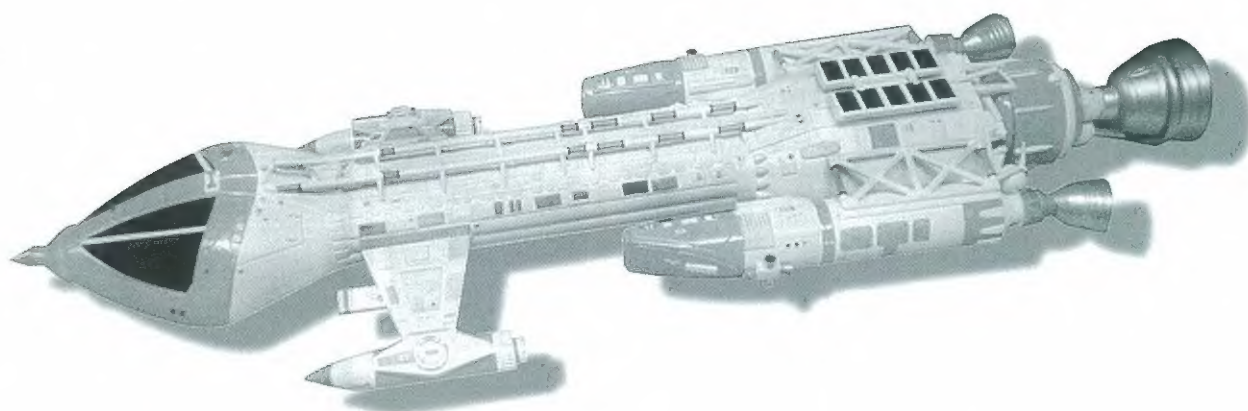


Visit the Comet Miniatures Marketing
stand at the NEC Memorabilia Show,
November 25-26, and be the first to
see the new AB Models Bitemobile!

You'll also have the chance to buy many
of these kits at special show prices!

Busman's Holiday

**Simon Roykirk takes time off
from the 44" Eagle to review
A-B's new 22" Space:1999 Hawk fighter**



Working on A-B's 44" Eagle kit over the past seven months or so has proved to be a long-term investment in time and patience, calling on just about every modelling skill I've begged, stolen or borrowed over the years. A welcome respite from this rewarding but demanding project recently arrived on my desk in the form, ironically enough, of another Space: 1999 spacecraft—the Mk IX Hawk fighter, also from the A-B construction yards...

The *Hawk*, as every Space:1999 fan will tell you, featured in the explosive first season episode *War Games* and is a leaner, meaner cousin to the *Eagle*, a heavily armed variant from the same fictional terran aerospace company that designed the *Moonbase Alpha* workhorse—hence the deliberate similarities in styling and cockpit module contours between the two craft.

A-B's *Hawk* is based on the thirty four inch studio miniature, and is around twenty two inches in length, making it some five inches longer than the more sparsely detailed, half-scaled model produced for the series. Ninety-two parts in resin, white metal and plastic (some actual injection moulded kit parts are included for detailing) come together to make up

the *Hawk* and seven pages of instructions plus a further seven pages of detailed diagrams are included to show and tell you precisely how assembly should proceed.

Stage One—Main Body

The body of the *Hawk* builds from two main resin halves (upper and lower) onto which are then added the command module nose 'spike', underside engines, rear bulkhead piece, fuel tank connector, main fuel tank halves, main engine halves, single piece top framework (a delicate white metal part) and solar panel upper and lower pieces. Instructions here are clear and each step is a simple procedure, similar in method to constructing an injection plastic kit.

Boosters

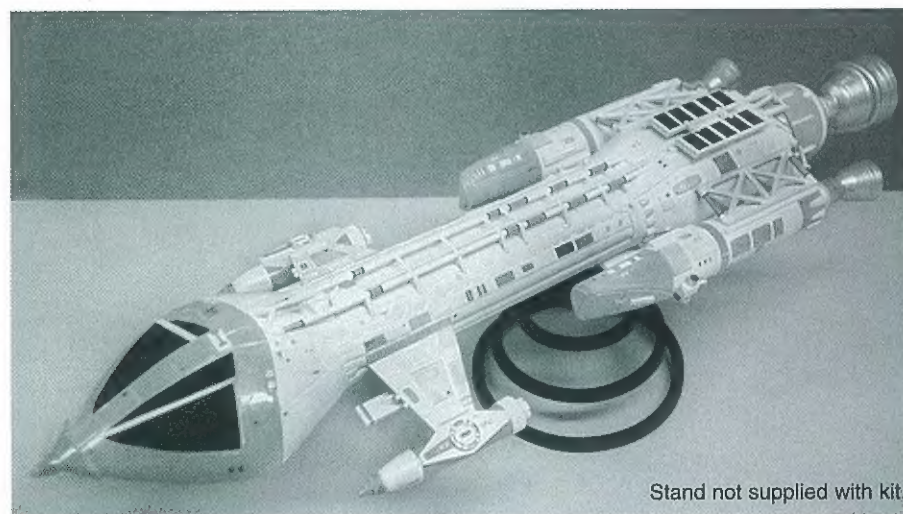
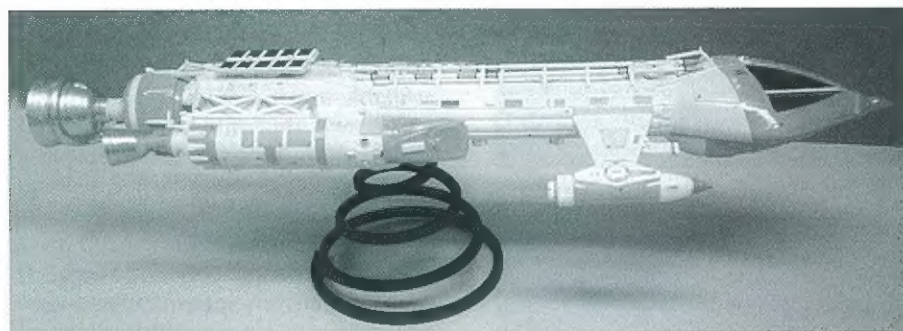
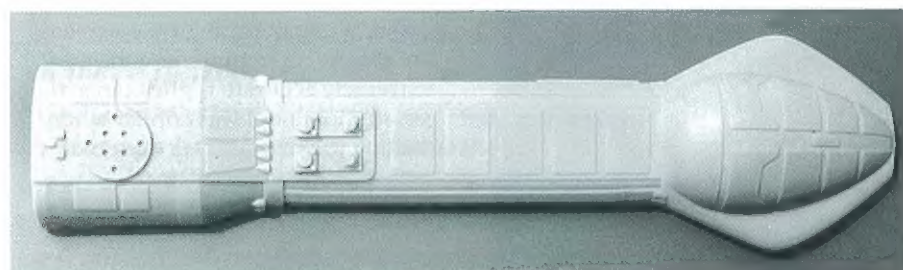
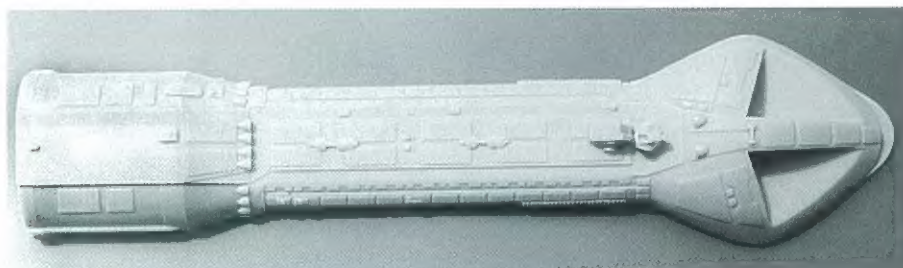
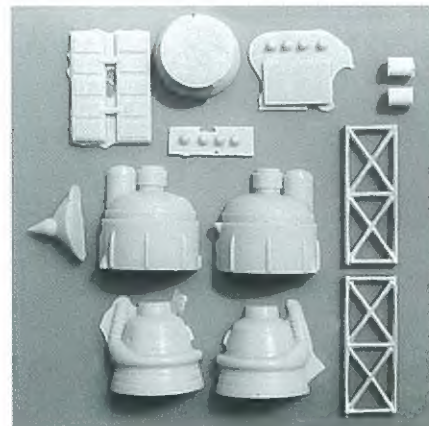
The *Hawk*'s outrigger 'booster packs' are the next sub-assemblies to go together. With each pack it is—again—a matter of assembling resin halves of major components (booster bodies, engine connectors, rear engines) then adding the front caps, underside connectors, white metal frameworks and small details before finally locating the sub assemblies against the body at either side (a precise diagram shows you the exact angle at which to do this). Again, construction is simple and problem free.

Side Wing and Detail

The craft's front 'winglets' with their matra pod armaments are each a five part construction that goes together quickly and easily. As with the booster-to-body stage, precise angles at which to mount the winglets to the body are illustrated in the accompanying diagrams.

Final Detailing

The original *Hawk* miniatures made generous use of *Apollo lunar module* leg kit bits on the craft's underside and around the rear engine assembly, cut down to disguise their origins. Actual injection kit bits are provided with the A-B *Hawk* and these need to



Stand not supplied with kit.

be cut to shape and size as indicated in the instructions. Circular fuel tanks and struts for the rear and brass fuel lines that span the top framework along its left hand side complete the *Hawk's* assembly.

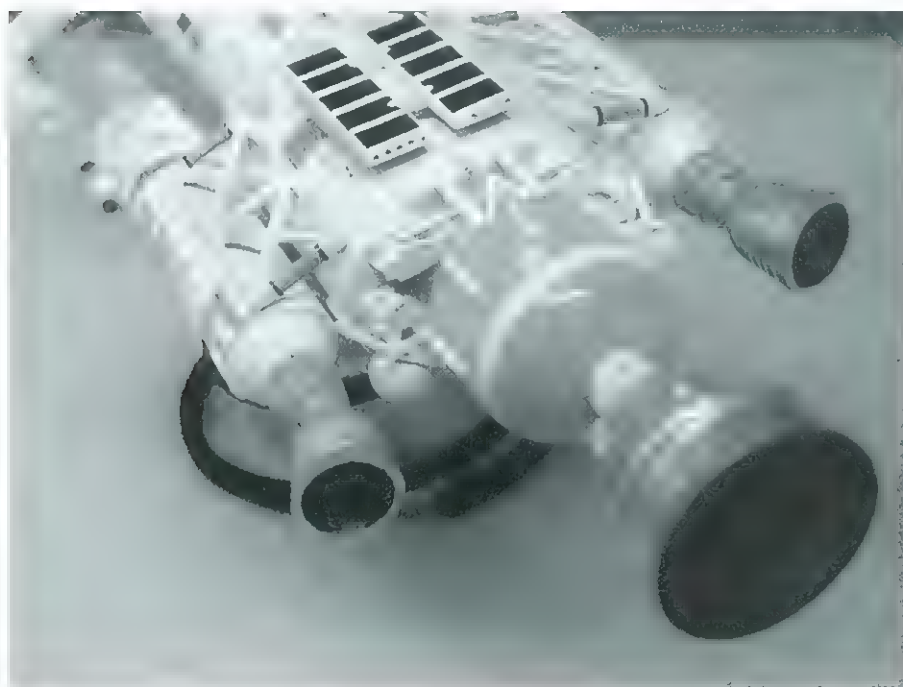
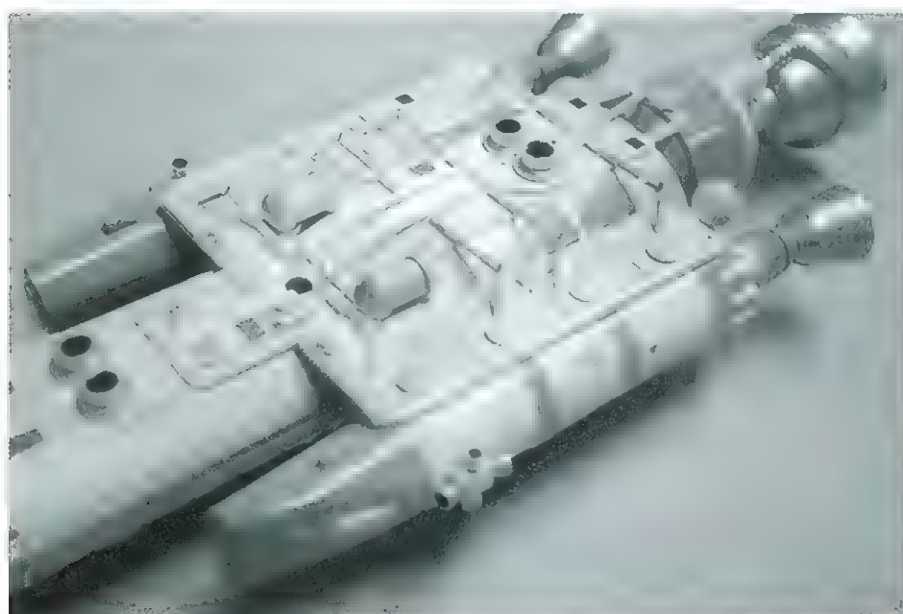
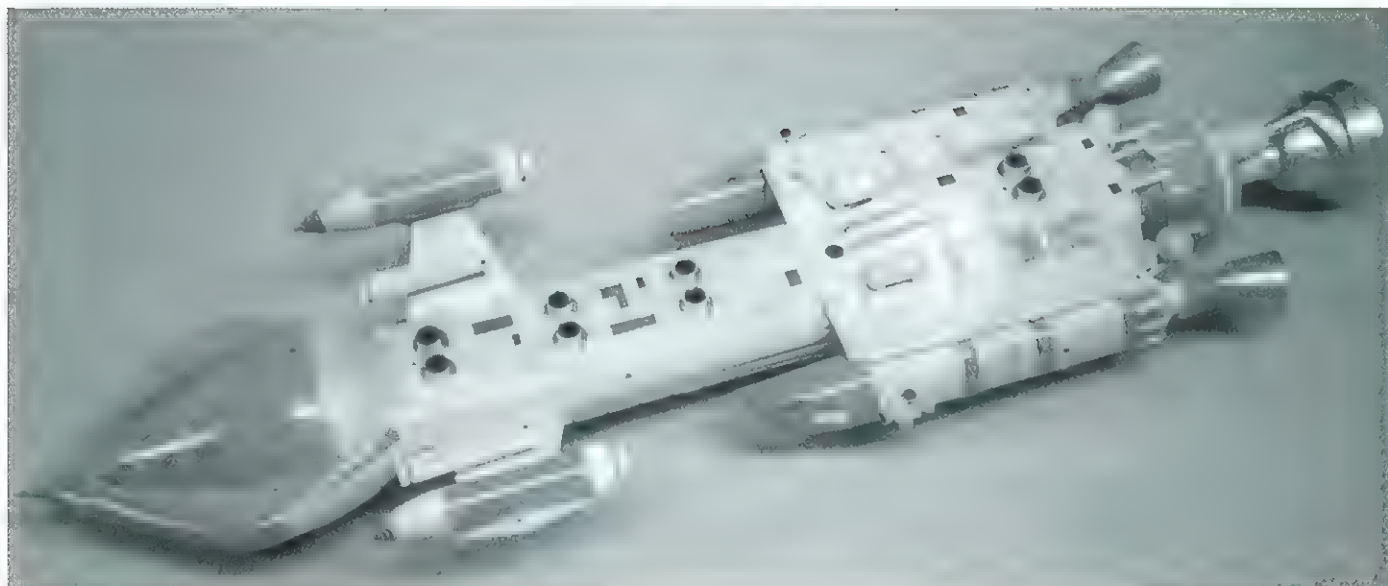
Painting

As is generally known, the *Hawk* miniatures were originally supplied to the studios in a pristine white paint scheme. It was then decided that this was too similar to the *Eagle's* livery and that, although the two spaceships were intentionally similar, their individuality could be better expressed through contrasting paint schemes, effectively identifying each craft in battle scenes. Sections of the *Hawk* (around the beak; front caps and extreme rear of the booster packs plus two circling mid stripes; weapons pod bodies; rear engine) were therefore overpainted in a bright orange.

Once the *Hawk* has been primed and sprayed white, it is therefore a matter of carefully masking off and painting these areas before adding final detailing in the form of silver engine bells and attitude jets, various grey, orange and brown panels, orange striping to the top framework, judiciously placed small decals from the spares box and, of course, the black anti glare panelling to the command module. The *Hawk* can then be lightly weathered (the studio miniatures were not too heavily 'dirtied down') paying particular attention to the orange sections.

Conclusions

Our review kit of A-B's new *Hawk* was crisply detailed throughout. There was the usual resin flash to remove from around small parts, but this is normal for this type of product and parts rapidly cleaned up. Being far less complex in construction than A-B's *Eagle* kits, the *Hawk* assembles



quickly too, so the genre modeller who likes to see his new vehicle of choice take shape over a few weekends will find this subject right up his street. The *Hawk* bristles with detail, is nicely sized for display, and builds into an impressive and extremely accurate replica (an actual 34" studio model was copied when making the masters) via extremely well detailed and explained instructions.

Is it worth its £249.50 price tag from *Comet Miniatures*? I would have to say *yes, definitely*. If you are a keen, moderately skilled 1999 modeller nothing like this has been made available to you before and the kit is a welcome complement to the *Eagle* which, although a perennial favourite, has recently turned up in so many scales that a subject that is a little rarer from the series is a refreshing change. Let's hope more 'guest craft' from *Space:1999* appear in kit form over the coming months.

All in all an excellent addition to the 1999 kit fleet.

Review kit kindly supplied by Comet Miniatures. 

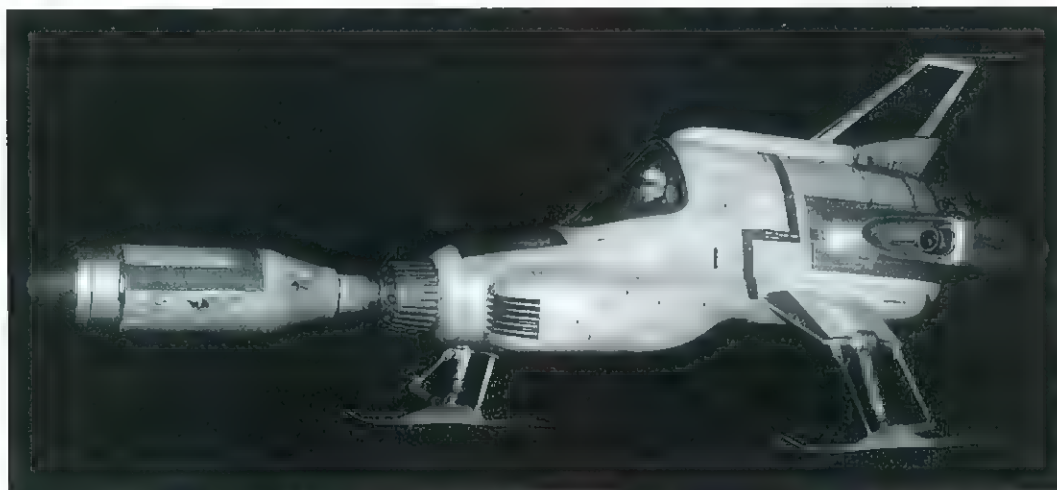
Giant!—update:

readers who have been following my build up of *A-B's* 44" *Eagle* please note that, due to the amount of space taken for the 2001 coverage in this issue, the scheduled **Giant!** instalment has been pushed back to issue 50, which will feature a double length concluding article to the series—thanks for your patience.

Interceptors—Immediate Launch

Special Project: the making of ENA's UFO Moonbase Interceptor kit

Part One—an overview mike reccia



One of the original large scale *Interceptors* from the collection of Phil Rae.

Photo by and courtesy of Howard Davies.

It's not often I pull rank (I'm more likely to pull a muscle), but when I heard that Comet Miniatures were delivering ENA's twenty-seven inch long UFO Moonbase Interceptor garage kit for review I waited in the early morning shadows by the editorial doors, let down the perimeter force field the moment I spotted the mail man and pounced on the incoming package before old Roykirk could get his sprue-grabbing mitts on it. If there's any UFO kit reviewing to be done in this magazine, I'm the one who's gonna do it...*

To bring genre fans younger than I am (at least, physically) up to speed with the subject, the *UFO Interceptor* was a uniquely designed, moon-based, one-man space fighter armed with a single, huge atomic missile in its nose. With this it could blast the pants off the spinning-top-like *UFOs* that a bunch of body-part snatching aliens were constantly piloting to earth (the fact that each *Interceptor* only carried one missile and frequently missed its target allowed many a *UFO* to slip past the *Moonbase* defences and menace our planet—a useful, story-enhancing

limitation). Three *Interceptors* were housed in craters beneath the lunar surface, ready to rise hydraulically to the occasion at a moment's notice from *Moonbase*, the lunar facility of *SHADO* (Supreme Headquarters Alien Defence Organisation). The series was, in my opinion, Gerry Anderson's finest hour, featuring some of the late Derek Meddings' most intricate and convincing model work and effects. The basic lines of the *Interceptor* were originally drawn up by *Century 21* stalwart Mike Trim, with Derek Meddings then working

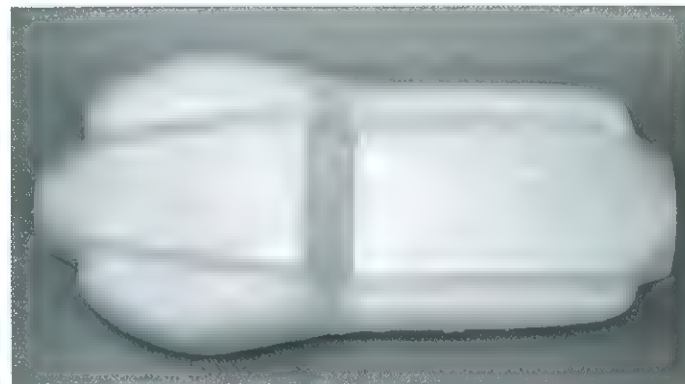
on the design to result in a more futuristic appearance¹.

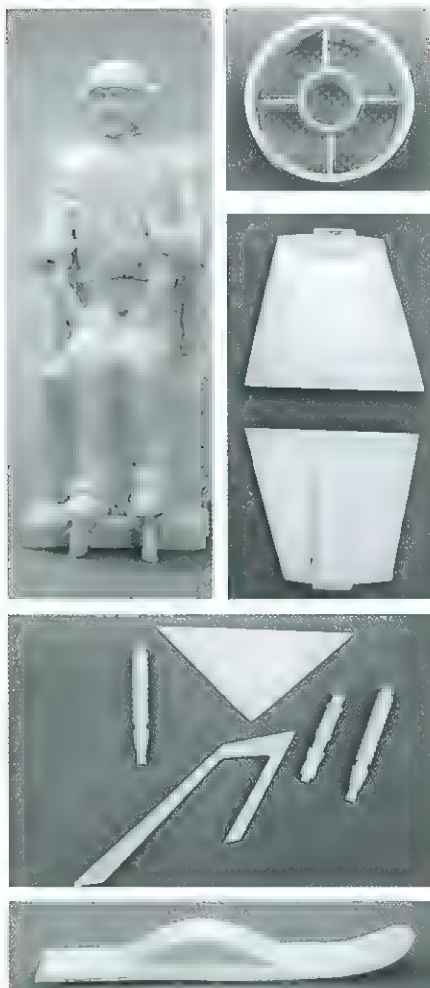
From the sketches studio miniatures were subsequently constructed in two sizes (with wild variations in basic contours between the two scales, I might add). The largest models, upon which this kit is based, were around twenty-six inches long.

ENA's rendition of the craft arrived in a large box with a picture of one of Derek Medding's original studio sketches for the interceptor on the front. The box houses a variety of parts (around thirty-seven, I make it) in fibreglass resin, standard resin and vacform transparent plastic sheet, plus six pages of instructions (including an exploded diagram) and a set of waterslide decals.

First Impressions

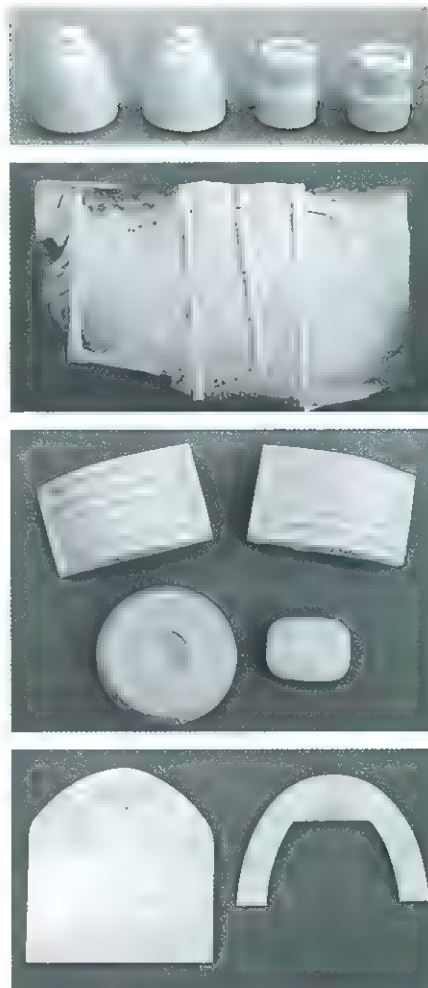
As with all our multi-part projects this, the first article, is simply intended as an overview of the kit,





with subsequent instalments detailing the construction, super-accurizing, painting and weathering of the subject. So—what *are* my first impressions? Well, the two-part body (which is produced in fibreglass resin for strength) is well cast overall—though a little bumpy in places—and should present few problems at construction stage. 'Add on' parts such as the stub 'wings', landing skids, engine fairings and intakes/exhausts, huge rear two-part engine, missile (a one-piece casting) and missile 'nozzle' look, on first inspection, to be exceptionally well cast and very smooth and clean, with only a minimum in the way of clean-up being required. Leg struts require a little more clean up as they are supplied joined together by a thin wall of excess resin. The cockpit blister is a robust, clean, clear vacform piece and the decal sheet, reproducing the riot of signage featured on the studio models, is excellent (strangely none of the distinctive red stripes are included, however, but this is hardly an insurmountable deficit).

A full interior is offered in the form of a bulkhead wall, dash instrumentation and a helmeted pilot



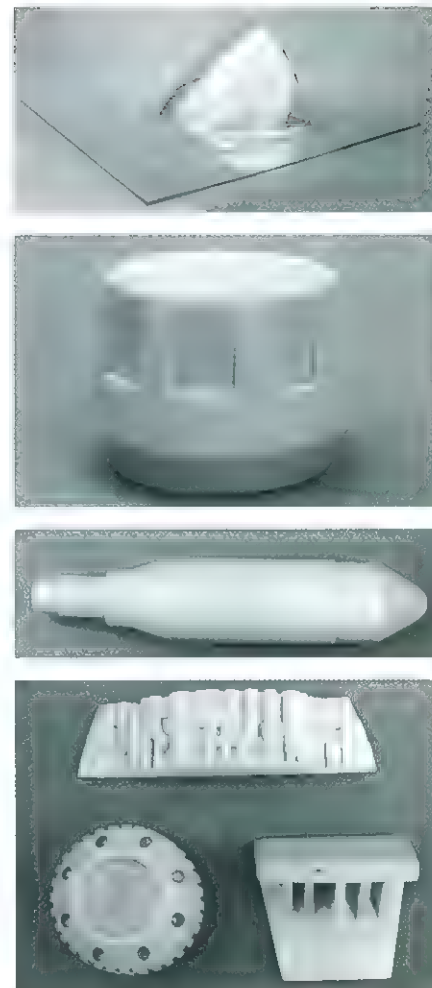
in a detailed seat with separate headrest holding the craft's joysticks in his hands. Although well realised, I do feel that the figure is a little small (and perhaps a tad too happy for one on such a dangerous mission—see photograph)—but I could be wrong. I'll do a little research on the subject and, if necessary, will rebuild this feature to the correct scale.

Required for construction

If you intend this series to be a 'model-along-with-Ed' experience you'll ideally need the following:

- Scalpel and blades.
- Junior Hacksaw.
- Ruler.
- Wet and dry sandpaper.
- Two-part epoxy adhesive.
- Needle files.
- Airbrush.
- P-38 Car Filler.
- Car paint sprays (details later).
- Brass rod.
- Paintbrushes.
- Model paints (details later).
- Mini drill, bits, standard drill and stand.

Full details of any materials required for superdetailing in any area will be provided in later instalments.



Conclusions

On opening the box I wasn't disappointed. I like big craft in general and I like *UFO* craft in particular, so the *Interceptor* will prove to be a labour of love. I'm particularly looking forward to the detailing and weathering stage, as the large studio *Interceptors* were absolutely *covered* in warnings and instructions, and featured use of various silvers to give a convincing panelled effect on the engine, fairings and missile. Join me next issue, when we'll set to work on what should prove to be a most impressive piece of *SHADO* hardware...

**Fret not, gentle readers, the friendly, good-humoured rivalry between messrs Reccia and Roykirk only serves to enhance the quest for the perfect review at Millennium Towers.*

Source of information:
21st Century Visions
by Derek Meddings.
Published by Paper Tiger.

Review kit kindly supplied by
Comet Miniatures 

...continued from page 3.

the many effects techniques which were used up until that time. According to many of his collaborators, Kubrick was very surprised that nearly all of the films in this genre failed to depict space travel in a convincing manner. It was his feeling that most filmmakers used the genre primarily for explorations of fantasy but never for a realistic depiction of the future. Another goal of Kubrick's was (from a technical standpoint) to create visuals that would not be dated by time or advancement of future film technologies. He began to search out the most talented artisans working at that time to help bring his vision to the screen...

It was at *The New York World's Fair* in 1964 that Kubrick viewed a film by Los Angeles-based *Graphics Film Corporation* called **To the Moon and Beyond**. It featured some intriguing and visually arresting images of space travel and the planets. Based on their work on the film, Kubrick hired *Graphics Films* to create some preliminary artwork for **2001**. One of their employees—Doug Trumbull—created much of the artwork for the *GFC* film and really admired Kubrick's concepts and ideas. Although the firm eventually departed from the **2001** project (due to their great distance from Kubrick's base of operation), Trumbull approached Kubrick for a job on the project and was hired, first as a graphic artist and illustrator and eventually as one of the four main supervisors of the Visual Effects. Con Pederson, who also worked on **To the Moon and Beyond**, was also hired as one of film's *lead visual effects supervisors*. "Kubrick saw the film and was interested in the space effects in it and phoned *Graphic Films*," notes Pederson. "**To the Moon and Beyond** took about five or six months to put together. I don't recall its exact length, maybe ten minutes. It weighed a lot—I had to haul it to the *Fair* myself."

"(Kubrick) said he was planning a science fiction film and thought we might be interested," recalls Pederson. "In speaking with Stanley I remarked that **Dr. Strangelove** was one of my favorite films. He was elated at that, as though he'd never heard a compliment like that before. He invited me to New York to see the script and discuss the project. His studio apartment near the southwest corner of Central Park was lined with large storyboard paintings of fanciful worlds and spacecraft. I read the script in a nearby hotel room and was enthralled by it, as well as by the fact it was based on an Arthur Clarke short story I remembered reading some years earlier in my science-fiction fan youth."

Many filmmakers have often commented on how similar filmmaking is to a military campaign, and certainly Kubrick was no exception to this analogy. For his army, Kubrick would assemble some of the most creative and talented minds in film production. His team included *chief production designer* Tony Masters; *co-production designer* (with Harry Lange) Ernest Archer; *art director* John Hoesi; *director of photography* Geoffrey Unsworth; *second unit DP* John Alcott; *first assistant director* Derek Cracknell; *camera operator* Kelvin Pike; *chief mechanical effects supervisor* Wally Veevers who designed many of the film's intricate camera and dolly systems and visual effects rigs; *executive producer* Victor Lydon; *editor* Ray Lovejoy; *visual effects supervisors* Con Pederson and Tom Howard (a veteran of *MGM* films and *Oscar* Winner for **Tom Thumb**) and Douglas Trumbull. Initially, Kubrick had hired a man named Wally Gentleman from the *National Film Board of Canada* to supervise the effects. Gentleman had worked on the effects for a film called **Universe**, a short made by the infamous B-unit of the *Canadian National Film Board*. Gentleman eventually had to drop from the project due to illness but was



One of many orbiting satellites designed by Harry Lange and team, involved heavily in pre-production.

Universe was a ten minute documentary-like tour of the universe from our own planet into the far edges of the known galaxy at the limits of mid-century astronomical observation, passing by planets and star clusters. It contained stunning effects for its time. So impressed was Kubrick by the look of this film, he had a print ordered which he screened for himself as reference in England. Many on the crew who have seen **Universe** believe this film was the visual inspiration for **2001**.

Kubrick also hired talented costume designer Hardy Amies, who designed gowns for Audrey Hepburn and the Royal Family, to design the film's futuristic clothing. **2001**'s remarkably realistic space environment suits were the creation of a British firm located in Manchester, England called *Frankenstein Ltd.* which was in the business of creating real life hazardous environment gear and protective suits. *Master Models Ltd.* of London created **2001**'s unique space helmets.

Other technicians would soon join Kubrick's consortium. His visual effects team would include amongst its ranks some of the industry's most talented artists. In addition to those mentioned above, the FX team included *cameraman* Bruce Logan; *animation cameraman* Richard Yurich; *technician* Brian Johnson; *technical animation specialist* Jim Dickson; *cameraman* Zorin Perisic; *graphic and effect designer* Colin Cantwell; *visual effects cameraman* Bryan Loftus; John Jack Malick, and David Osborne.

Filming on **2001** began on December 29th., 1965 in England at *Shepperton Studios*. For nearly three years **2001** occupied all nine stages at the *MGM Borehamwood* studio and would sometimes borrow stage space from the *Elstree EMI* studios. When *MGM* became



The Monolith appears on Earth.



Stuart Freeborn sculpting ape mask.

overrun, production returned to the stages over at *Shepperton* some fifteen miles away in suburban West London (close to Kubrick's actual residence). It was decided by Kubrick to give the film its proper scope and to literally fill the screen. 2001 would be shot in *SuperPanavision 70* (65mm negative) with a screen aspect ratio of 2.35:1. Eventually the film was billed by *MGM* marketing as a *Cinerama* feature. Although the film never used the 'three-strip' projector exclusive to the *Cinerama* technique it was shown in *Cinerama* theatres throughout the United States as well as regular venues.

The Dawn of Man

The film opens on a wide-open vista of an arid desert in an unnamed region of Africa during the Pleistocene era. The title *The Dawn of Man* appears and the viewer is introduced to a tribe of prototype man. Not quite *Homo-erectus* but clearly at the stage of human evolution where he has formed factions yet has very little understanding of his surroundings. Rival tribes are introduced and it is clear that early man has yet to master the ability to even defend

himself from the dangers of nature or his own kind. The incredibly life-like simians were the creation of Stuart Freeborn, a British make-up artist (whose incredible synthetic creations would be seen again in *Star Wars* some ten years later). Freeborn was assisted by British make-up artist Colin Arthur who helped create the mask's elaborate mechanics.

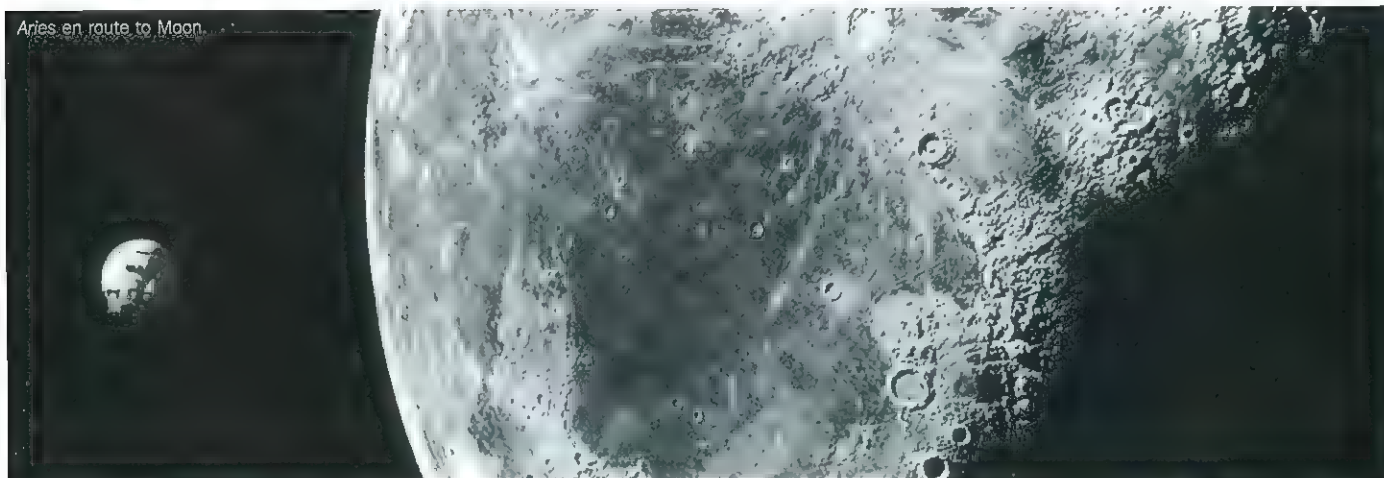
Freeborn's original concepts for the Early-man make-up were more *Homo Erectus* in outer appearance. Essentially these would be modern men who had just learned to walk erect but had shed their vestigial full-body hair. Their facial appearance would be somewhat ape-like, however. Ultimately the 'naked-ape' concept had to be disregarded due to censorship issues involving the showing of genitalia. Freeborn came up with a more ape-like creature and Kubrick approved the design. The director insisted that the masks had to be completely life-like and believable. Freeborn devised an internal mechanism inside the mask which allowed the actors to articulate the lip of the mask by simply manipulating the musculature of

their own faces. This gave the actors the ability to snarl and curl up the upper lip without any external cabling or wires, which would have been cumbersome and have to have been hidden.

Actors that met certain physical requirements were sought out for this sequence by the production. In order to maintain the illusion that these were simian creatures the actors had to be of slim build with extremely slim waists so it would not be apparent that they were men in skins. The leader of this tribe of ape-men was *Moonwatcher*, played by former mime artist Dan Richter who taught at the *American Mime School*, the *American Academy of Dramatic Arts* and the *Gene Frankel Theatre Workshop* in New York. He also spent four years touring the United States, staging mime shows in major cities and at universities. Richter was living and performing in England when he was chosen for the film to play *Moonwatcher*.

Many of the ensuing scenes in the *Dawn of Man* sequence were created with a process called *Front Projection* (known by many in the effects industry as the Alekkan-Gerrard method). The actors playing the simian/humans were acting on stage in front of a special screen designed to reflect an image, which was being projected at a certain angle from in front of the actors. A background plate of the desert was photographed and transferred to an 8 x 11 transparency and then projected onto the front screen material. A lighting grid was set up and calibrated to match the exterior shots.

It is during this sequence that we are introduced to the film's most mysterious element, the *monolith*. The *monolith* went through several design changes through the course of the production. One of the most intriguing early concepts was a crystalline form. It was to have been cast in clear acrylic and not completely opaque. However, initial castings showed





too many imperfections in the surface and that methodology was abandoned.

Here is a description of the *monolith* from an early draft of the script:

A10
EXT CAVE—NEW ROCK

It's a cube about fifteen feet on a side, and it is made of some completely transparent material; indeed, it is not easy to see except when the light of the sun glints on its edges.

There are no natural objects to which Moonwatcher can compare this apparition. Though he is wisely cautious of most new things, he does not hesitate to walk up to it. As nothing happens, he puts out his hand, and feels a warm, hard surface.

From this sequence we segue nearly four million years into the future. A myriad of orbital satellites appear floating above the Earth. Although it is never fully elaborated on, Arthur C. Clarke has maintained (in his book and subsequent interviews) that these are orbital weapons—another prophetic bit of conjecture. The original narration (which was, of course, ultimately dropped) also states that these are orbital weapons. The following is an excerpt from the film's original narration piece for this sequence:

B1 Earth 200 Miles above:

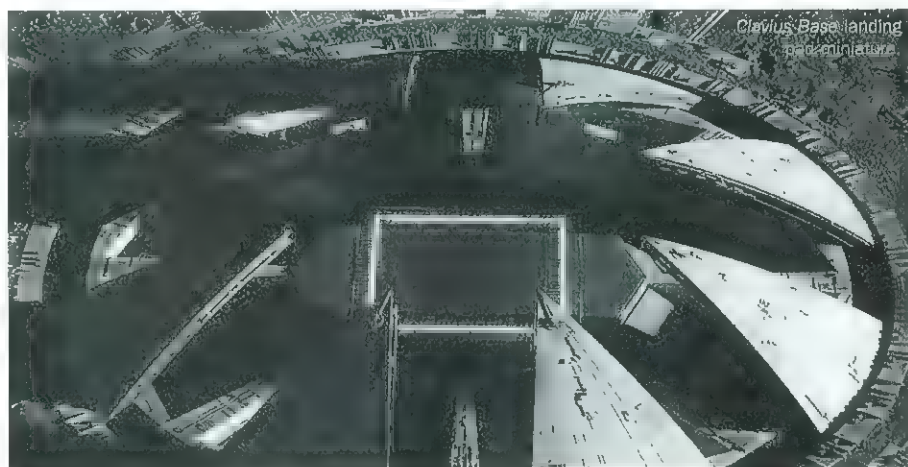
Hundreds of giant bombs had been placed in perpetual orbit above the Earth. They were capable of incinerating the entire Earth's surface from an altitude of 100 miles.

Matters were further complicated by the presence of twenty-seven nations in the nuclear club. There had been no deliberate or accidental use of nuclear weapons since World War II and some people felt secure in this knowledge. But, to others, the situation seemed comparable to an airline with a perfect safety record; it showed admirable care and skill but no one expected it to last forever.

Suggesting massive technological advancements, Kubrick fills the space above Earth with these machines. The majority of the satellite and ship designs were the creation of co-production designer Harry Lange and consultant Fredrick Ordway, whose experience in aerospace technology gave the film an incredible feeling of authentication.

The Orion III Clipper and Space Station One

Enter into the frame the space transport, the *Orion Pan Am Clipper*, on a rendezvous with *Orbital Space Station One*, a circular outer space habitat perpetually circling the earth. Close examination of the model indicates that the station is incomplete (sections can be seen unfinished). Perhaps Kubrick is suggesting that man is constantly evolving, changing and constructing—even in an optimistic environment such as this. For the shots of the *Orion* approach, a still photo of the smaller ship was photographed on an animation stand



which had the ability to track back and thus change the perspective of the ship as it moved closer to its destination. The *space station* was a model six feet in diameter, which was shot separately. The stars were also photographed separately and carefully matted together with the other elements. "Johnny Alcott was assistant to Geoff Unsworth but did a lot of the model and photo-blowup photography," recalls Pederson. "I would keep an eye on some of the lineups. Stanley would approve the lighting from *Polaroids* if he was busy on a live shoot on another stage. Wally Veevers set up all the motorized track work, with George Merritt's engineering department at MGM providing the hardware."

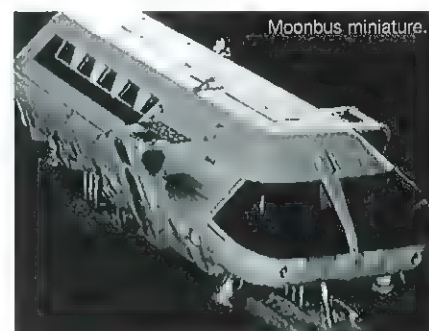
During the docking procedure, the audience is treated to a glimpse of the *Pan Am Clipper* interior. The ship is shuttling Dr. Heywood Floyd (William Sylvester) to *Space Station One* on his way to the *Clavius* moonbase. The cockpit features an

array of computer monitors which display vector graphic read-outs of non-descript computer data. Douglas Trumbull, whose background was in graphic design and airbrush artistry, was charged with the task of creating these (faux) digital displays. Without the benefit of actual computers and the methods to play them back clearly, Trumbull set up an animation stand and created the graphics by traditional animation techniques. The graphics monitors were made of rear-screen reflective material and dressed to look like actual monitors. The graphics were photographed on 35mm film and optically reduced to 16mm then projected from behind the set.

One of the interior scenes shows Dr. Floyd quietly sleeping in his passenger seat while his pen drifts weightless next to him. A kindly *Pan Am* flight attendant reaches out and places it in his pocket. This fairly simple looking effect was accomplished by veteran British effects master Wally Veevers. The pen was

suspended on a thin filament in the distant shots where the wire would be out of focus. For the close ups it was glued lightly to a sheet of acrylic which was completely transparent. The attendant reached out and simply removed it from the sheet.

To visually illustrate how the attendants were able to move in a weightless environment, a rotating set of the ship's galley was constructed. The foreground segment rotated with the camera to give the impression that the shot was 'locked-





off. The actor simply walked on a treadmill in the background set piece. The camera was locked down in the front section, then the actress essentially walked in place, thus giving the illusion of 'walking on the walls'.

After the docking of the *Clipper*, Dr. Floyd disembarks onto the *Space Station*. There is visual evidence of Earthbound references here, A *Hilton* concierge booth can be seen in the background as well as a sign for a *Howard Johnson* restaurant (plus, of course, the *Pan Am* emblem on the side of the *Clipper*). The clear intent here was to create a realistic future so that the audience would have an emotional connection to the surroundings. It can also clearly be seen that Dr. Floyd is speaking on a *Bell* videophone to his young daughter on Earth (played by director Kubrick's real life daughter Vivian). Ordway actually visited *Bell Atlantic* labs to research their experiments with long range voice and picture transmissions.

Clavius and the TMA-1

Now leaving the station, Floyd embarks on the *Aries Lunar* lander, which will take him to the *Clavius* moonbase. The *Aries IB* Earth orbit to surface craft was designed specifically for lunar landings, which is evident from the design of the outer hull and the landing gear researched carefully by Fredrick Ordway and Harry Lange. The

Aries model was about two and half feet in diameter. Many of the shots of this ship were done on an animation stand and composited into various backgrounds depending on the angle Kubrick wanted. The *Clavius Moonbase* interior where the *Aries* docks was, in fact, a model nearly thirteen feet deep. Several control rooms can be seen in the periphery where actual actors were filmed separately and composited into the final shot. Upon arriving at *Clavius*, Floyd conducts a brief conference with the station's scientific advisors and administrators and then immediately departs to the site of the excavation, location of the film's mysterious monolithic structure (called the *TMA-1* for *Tycho Magnetic Anomaly*, named after its proximity to the *Tycho* crater). A giant lunar surface was sculpted in clay by supervisor Doug Trumbull. It measured nearly thirty feet across. For the actual excavation shot, Kubrick shot actor Sylvester and his survey team (in environment suits) approaching the *monolith*. Since the camera was 'locked-off' Kubrick was able to composite the miniature portion of the lunar surface with the actual live action set of the excavation without a visible discrepancy in the joining area.

Jupiter mission: The Discovery eighteen months later.

After the *monolith* directs its radio emission toward Jupiter, an exploratory spacecraft, the *Discovery One*, is dispatched to investigate the phenomenon. Leading the mission is Commander David Bowman, played by American actor Kier Dullea. Born in Cleveland, Ohio, Dullea first appeared on screen in *Hoodlum Priest* (directed by *Empire Strikes Back*'s Irvin Kershner) in 1961. He received notice for his starring role in *David and Lisa* (1962) and received both the *BAFTA* and *Golden Globe* award for best newcomer for that film.

His second in command, Dr. Frank Poole, was played by American actor Gary Lockwood. A former College football star, Lockwood was born in Van Nuys, California and became very well known as a television actor, appearing on such popular shows as *Mission Impossible*, *Gunsmoke*, *Earth II*, and *Emergency Room*. Most science fiction fans will remember him best from the *Star Trek* episode *Where No Man Has Gone Before*.

Inside the *Discovery*'s main command module is one of the films' more fascinating environs—the centrifuge set. Kubrick reasoned that astronauts on a long interstellar journey would require artificial

Top: publicity shot of Orion Stewardess. Above: Kubrick on the Orion set. Full scale TMA-1 set photographed at MGM Borehamwood and composited with model lunar surface.



gravity to sustain them and to prevent muscles from atrophying. Artificial gravity in this case is created by a large, drum-like module within the ship that perpetually rotates. Production hired British firm *Vickers Engineering* to build this massive structure, which would eventually cost nearly \$750,000. The structure took nearly three months to build and was approximately forty feet in diameter. It required a tremendous amount of scaffolding built around it so that crew members and technicians could access any part of the set to make lighting adjustments. Outside observers often commented on how much it resembled a Ferris wheel from the exterior. Apart from the sheer mechanical difficulties, the *Discovery* centrifuge set presented considerable challenges to the lighting and electrical crews. How do you keep the lighting throughout the set consistent when the set is always turning? The crew solved the problem by mounting the lighting array in a circular formation near the center of the rotational axis. The camera was secured in the center of the set by creating a thin channel running up the center. The centrifuge was built with a channel running all the way round the casing. An array of flaps was used to cover up the gap so it was not visible in camera shot as it followed the actor. The flaps were made to remain closed throughout the complete rotation. Then the camera was placed on a mount, which poked up through the channel, but was not actually fixed to the centrifuge. When the centrifuge was set to make its rotation, it revolved past the camera. Each part of the set passed by while the flaps opened to make way for the camera mount and then closed immediately after.

The design of the *Discovery* ship itself was based on considerable study done by Lange and Ordway in post production. Every detail and component on the *Discovery* was carefully researched for its functionality and logical purpose by the design and research team. To gather information on potential long-range spacecraft, the 2001 team relied on materials and data provided by the *National Aeronautics and Space Administration* and several high tech companies in the private sector. For information on the *Discovery's* nuclear propulsion system, Ordway traveled to *General Electric's Missile and Space Vehicle Department* in Philadelphia. Kubrick was quite fascinated with a scientific study conducted by Freeman Dyson, a professor of physics at Princeton University, which described interstellar spacecraft propelled by an engine core which emits controlled pulses of exploding nuclear material. These



Above: HAL 9000 main console set. Close up of one of HAL's 'eyes'.

scientific theories were utilized in the ship design of the *Discovery*, as described here in the shooting script:

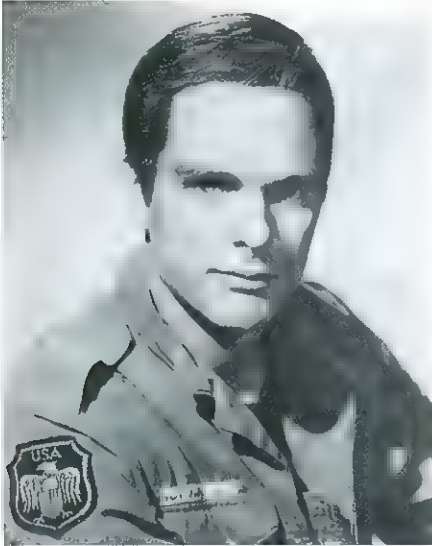
C1
DISCOVERY 1,000,000 MILES FROM
EARTH.
SEE EARTH AND MOON SMALL.

WE SEE A BLINDING FLASH EVERY 5
SECONDS FROM ITS NUCLEAR PULSE
PROPULSION. IT STRIKES AGAINST THE
SHIP'S THICK ABLATIVE TAIL PLATE

SEVERAL CUTS OF THIS.

Con Pederson was also involved with designing the ship. "I worked on part of the *Discovery* design, specifically the superstructure behind the command module," recalls Pederson. "I didn't think the preliminary look was up to date. I worked on that for a while and Stanley liked it, and I asked Harry Lange and Tony Masters in the Art Department to refine the construction details. In my view, Harry really set the look of the film. He also had been at Huntsville, though we hadn't met there. Also I spent quite a bit of time with Stanley storyboarding the final *Discovery* sequence itself. Despite all the script versions we were well into shooting before the story was locked down."

The main command module contains the centrifuge and the living habitats for the astronauts as well as the *EVA/Pod* bay station. In between is a long section of storage modules, which stretches to the rear module containing the nuclear core propulsion system. To show the vast expanse of this enormous craft the miniature department built the *Discovery* to nearly fifty feet in length. The large command module at the ship's bow was six feet in diameter. The miniature *EVA pods* were thirteen inches in diameter to keep them in scale with the *Discovery*. Such a large and unbalanced miniature would prove to be difficult to move and keep steady. Wally Veevers and his crew built stabilizing mounts that the ship could be securely faceted to. It was photographed always in a stationary position. The camera that photographed it would dolly in the opposite direction of its actual movement to suggest forward momentum. Jim Dickson recalls the track and rig system built by Veevers for the *Discovery*: "Stanley ordered (Veevers) to produce 150 feet of precision dolly track 30 feet in the air on a giant stage for [the] miniature of the very long space craft move. He did it and exclaimed to me that it was accurate to .010 across the distance. It was enormous, with scaffolding from everywhere. Then Stanley decided to put it



back on the ground without shooting a frame. We had a few drinks over that one."

The HAL 9000

The instruments and systems of the *Discovery* are controlled by the higher functions of the *Hal 9000* (short for *Heuristic Algorithmic Learning computer*). *Hal* is also alphabetically three letters up from *IBM*). *HAL*'s outer appearance design turned out to be quite simplistic. Essentially a red eye encased in a rectangular panel, *Hal*'s appearance is a brilliant example of the filmmaker's sometimes minimalist design sensibilities. *HAL*'s control panel consisted of many screens installed onto the set of the centrifuge with 16mm projectors behind them to project the images of *HAL*'s read-outs. It was also used for *HAL*'s main screen which receives the transmissions from mission control (The voice of mission control was Frank Miller, who was in reality a U.S. Air Force Traffic Controller, hired by Kubrick to provide a convincing voice for the *Mission Control* center). *HAL* represents man's next great advancement as an evolutionary species—a tool that replicates the mind of a human being. Kubrick and his team carefully researched

advanced computer technology, particularly the work of Professor Marvin Minsky at *M.I.T.*, whose groundbreaking studies in the field of artificial intelligence were inspirational to the director.

Despite his artificial nature, *HAL* turns out to be one of the most emotional characters in the film. Canadian actor Douglas Rain provided *HAL*'s hypnotically dispassionate voice. Rain studied acting at the *Banff School of Fine Arts* in Alberta, Canada, and at the *Old Vic School* in England. He was a charter member of the *Stratford, Ontario Festival Company* and he appeared as *Henry V* in 1966. Whether intentional or not, Rain's stoic interpretation of *HAL* nearly manages to steal the show away from Lockwood and Dullea. It has often been debated by viewers and critics alike whether Kubrick was trying to show the breakdown to social interaction and communication due to our own technical advancements. The human actors seem to speak to each other in either quaint pleasantries or exchange technical information unemotionally. Much of this analysis comes from the interpretation of *HAL*, whose higher functions are meant to mimic the synapses of the human mind. Ultimately *HAL* discovers (after falsely predicting a fault in their communications system) that *Bowman* and *Poole* plan to shut down his higher functions (a computer lobotomy, perhaps?). *HAL* attacks and kills *Poole* while he is inserting the communications module inside the *AE35* antennae. He then kills the three hibernating astronauts by shutting down their life support system.

HAL traps *Bowman* outside the *Discovery* without a helmet, forcing him to enter through the emergency airlock. Kubrick achieved this effect by hanging his stunt man on a wire rig above the camera which was shooting upward. The actor was released and then pulled back up as the artificial gravity takes hold. Although this scene drew criticism from many as being scientifically impossible,

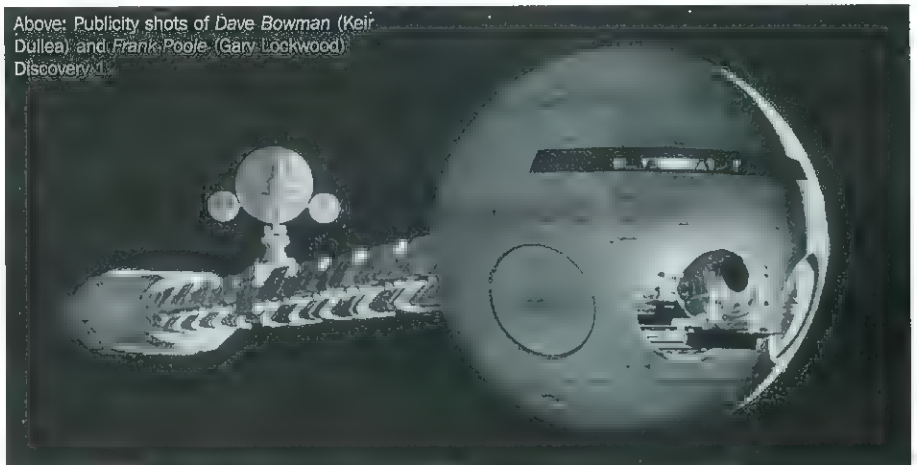
Clarke claimed the scene was very much in the realm of possibility after researching scientific experiments on animals in short term exposure to airless vacuum environments. Upon re-entering the *Discovery*, *Bowman* immediately shuts down *HAL*'s higher functions by entering the computer's logic center. The computer brain consists of thousands of transparent, rectangular blocks four inches long and two and a half inches high. An early draft of Kubrick's script briefly explains how scientists engraved these blocks with *HAL*'s intelligence:

C142—
CONTINUED
EACH RECTANGLE CONTAINS A
CENTRE OF [A] VERY FINE GRID OF
WIRES UPON WHICH THE
INFORMATION IS PROGRAMMED.

HAL's higher function interior or *brain center* would be a much more complex design task for the crew. In order to get the wide view of the interior of *HAL*'s higher function center, the set had to be built approximately fourteen feet in height and then shot on its side. The only known injury on the entire shoot was here when a crew member broke his back after accidentally falling from the top of the set. In the film, the interior of the *brain center* is pressurized and kept at zero gravity. To simulate weightlessness, a stunt man had to be rigged by wires from the top of the inside of the logic center. The set was turned vertically so the camera was pointing straight up and he was hanging down by a wire from above. Lighting set up and camera angles would be crucial in this particular instance so the wires could be kept invisible. When you strap a wire harness onto someone, where the wire comes out of the clothing there are always stress lines. To avoid this sort of problem you suspend the person from the ceiling and work with the camera looking up at them so the support wires will not be in the camera's field of view.

...continued on page 39.

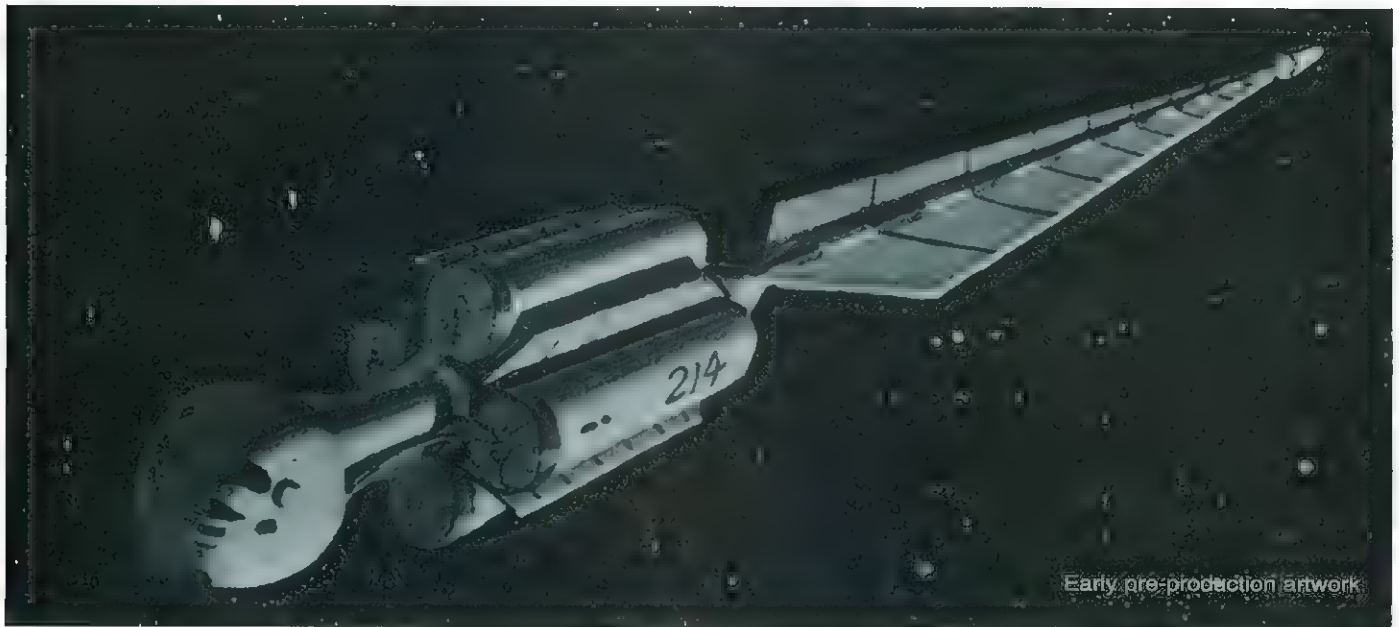
Above: Publicity shots of Dave Bowman (Keir Dullea) and Frank Poole (Gary Lockwood) on the *Discovery*.



Ooh—and a cuddly Hal toy...

Imagery in two and three dimensions from 2001.

Phil (Underman) Vendy of *Underman's 2001*



A New Mystery

In Stanley Kubrick's 1968 production *2001: A Space Odyssey*, an inert black slab baffles the ingenuity of humans shocked at the realisation that the universe is home to at least one other species of demonstrable intelligence. Unravelling the *monolith's* mysteries proves to be beyond the capabilities of science in the year 2001 (or even 2010, as we are advised in the opening scene of Peter Hyams' 1984 film of that title), and humankind's vast expenditure of resources to create living environments on the moon and launch a mission to Jupiter space, as portrayed so seductively in the film, are reduced to little more than the first steps of a toddler when compared to the ease with which that other unknown life-force was evidently able to cross from galaxy to galaxy, leaving its mark as it went.

At the time of the film's release, few among the kind of audiences likely to be attracted to big-screen science fiction knew much more about its director than *Moonwatcher*, *Dr. Heywood Floyd*, or any other representative of evolving humanity knew about the creators of the *monoliths*; yet the launch of the film around the world in March 1968 caught the imagination of a whole generation fascinated by the possibilities of what lay beyond

current knowledge, and the ripples left by the entry of 2001 into what, in comparison, now seems like the calm pond of speculative movie making, are continuing to spread more than thirty years later. Kubrick, having engaged the services of Arthur C. Clarke, took us from *Buck Rogers* to the 21st century in 'one giant leap', while lesser directors continue even today to struggle when faced with even 'one small step'.

Looking back from almost the very point in the future we experienced and shared so many years ago, it takes great effort of memory and imagination to recall the impact the film had. Some people consider Neil Armstrong's descent to the moon as being the single most significant defining event of the twentieth century; to remember the original effect of 2001 we must cast our minds back to a time before any human had set foot on a world other than Earth. We might imagine how it would seem if released today with the full force of the Hollywood marketing machine, but little of that was in evidence in the mid '60s. There was no cute catchphrase to help people understand what the film was about, although some of the early marketers and reviewers tried hard: "*A Taste for Today, a Talent for Tomorrow...*"; "*An Epic Drama of Adventure and Exploration...*"; "*A Flight of Unearthly*

Beauty..."; "*Fanciful Leap Across the Ages...*"; "*Across the Stark Beauty of the Lunar Plains...*" and, most memorably for the particular audience which 'tuned in' to the film, "*The Ultimate Trip*".

It is notable that in most such cases, the phrase is specific to one particular scene in the film, and that reflects one of the difficulties audiences have always had in grasping the sheer scale of Kubrick's triumph. When asked to express the effect their first viewings of 2001 had on them, people often struggle to find words sufficient to describe the feeling they had. Many recall a period of blankness on leaving the theatre—for myself, I can only think I was on some kind of autopilot to find my way home again. My brain seemed to have been set ablaze by what I had just experienced, and the ashes are still glowing bright after more than three decades.

In the years since 1968, many artists have sought to encapsulate in graphical and sculptural form what that experience was all about, and various products based on subjects from the film have been marketed. This article takes a broad look at this field, and includes observations by some of the artists which express, in their own words, what it is that inspires them about 2001.

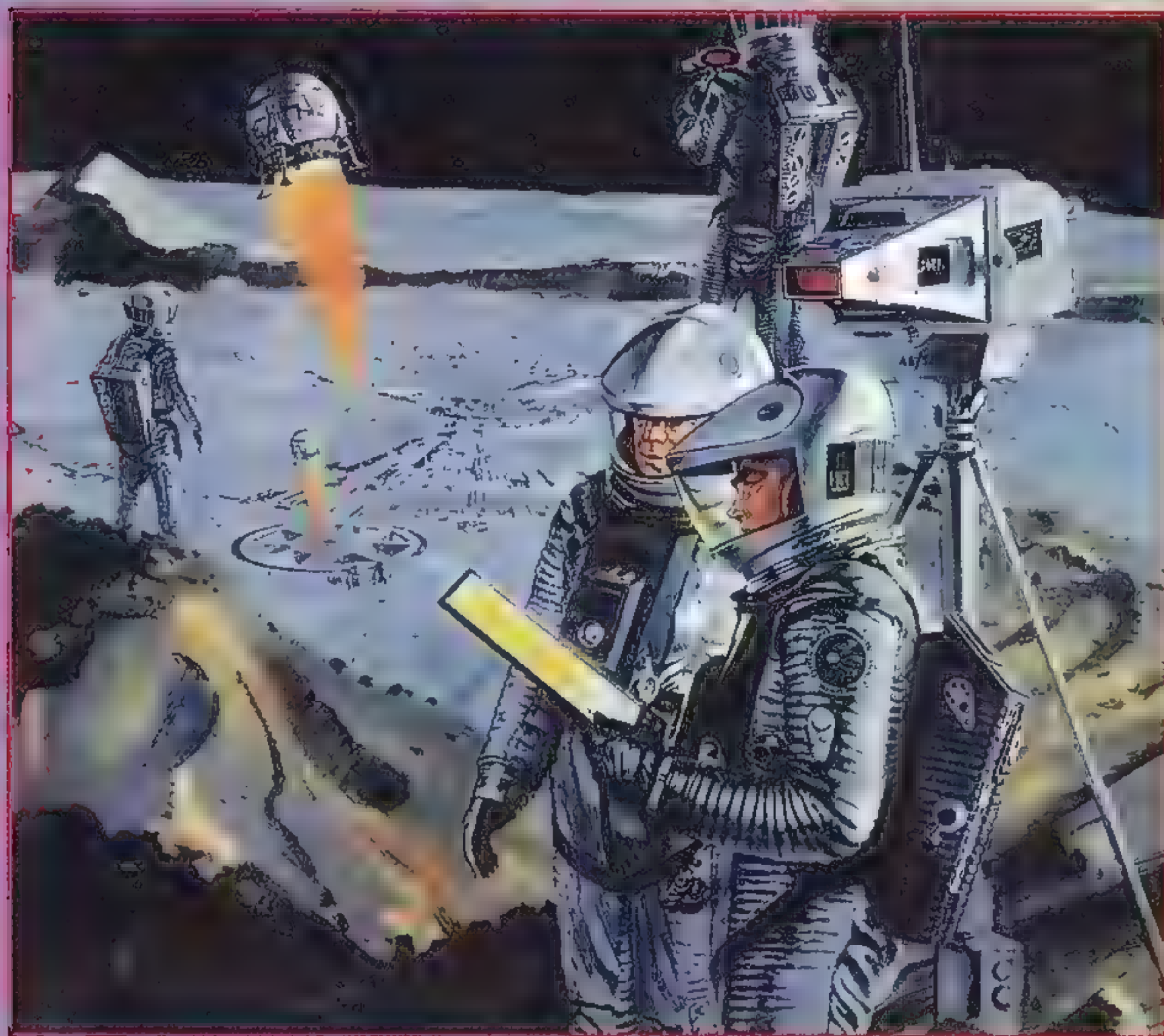


Hidden Riches

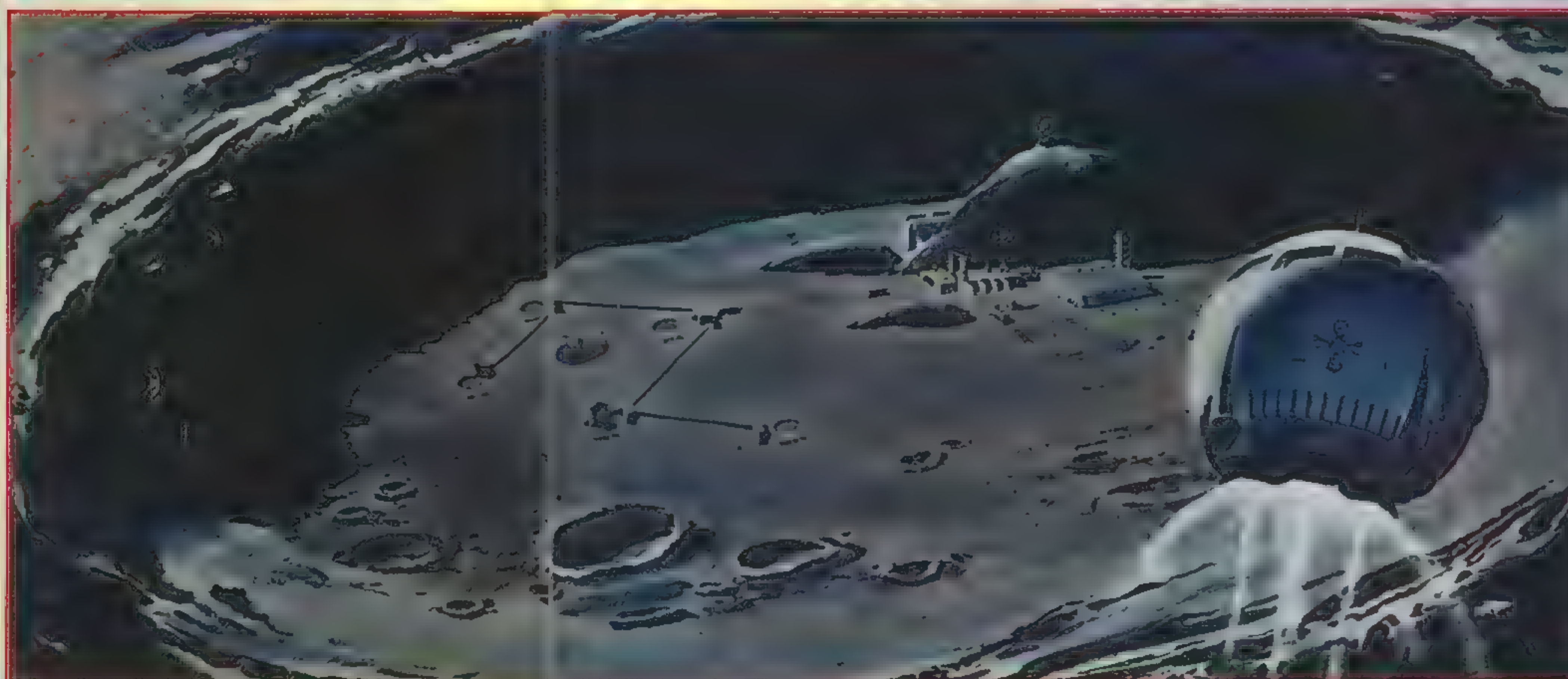
For a film so rich in visual imagery pre-release publicity was tantalising rather than explicit. The paucity of graphics can seem surprising, but is in keeping with what we quickly found out to be characteristic of the film's creator and his desire to reveal nothing until he was good and ready. A picture of a galaxy straight out of an astronomy text book was the only image used initially, with the simple message that work had begun on Stanley Kubrick's production of a new MGM film. Strategically placed magazine advertisements told us

nothing more than the fact that 'this space is reserved for **2001: A Space Odyssey**'. What did it mean?

If we wanted to know we would have to go and watch it for ourselves and, certainly, whatever early viewers might have expected to see, the reality was quite different. It was not until the movie premiered that we began to see the images which would become so familiar in advertisements and posters: the face of *Dave Bowman* (Keir Dullea) gazing inscrutably out of his space helmet (what *was* he seeing that gave him that expression?); the



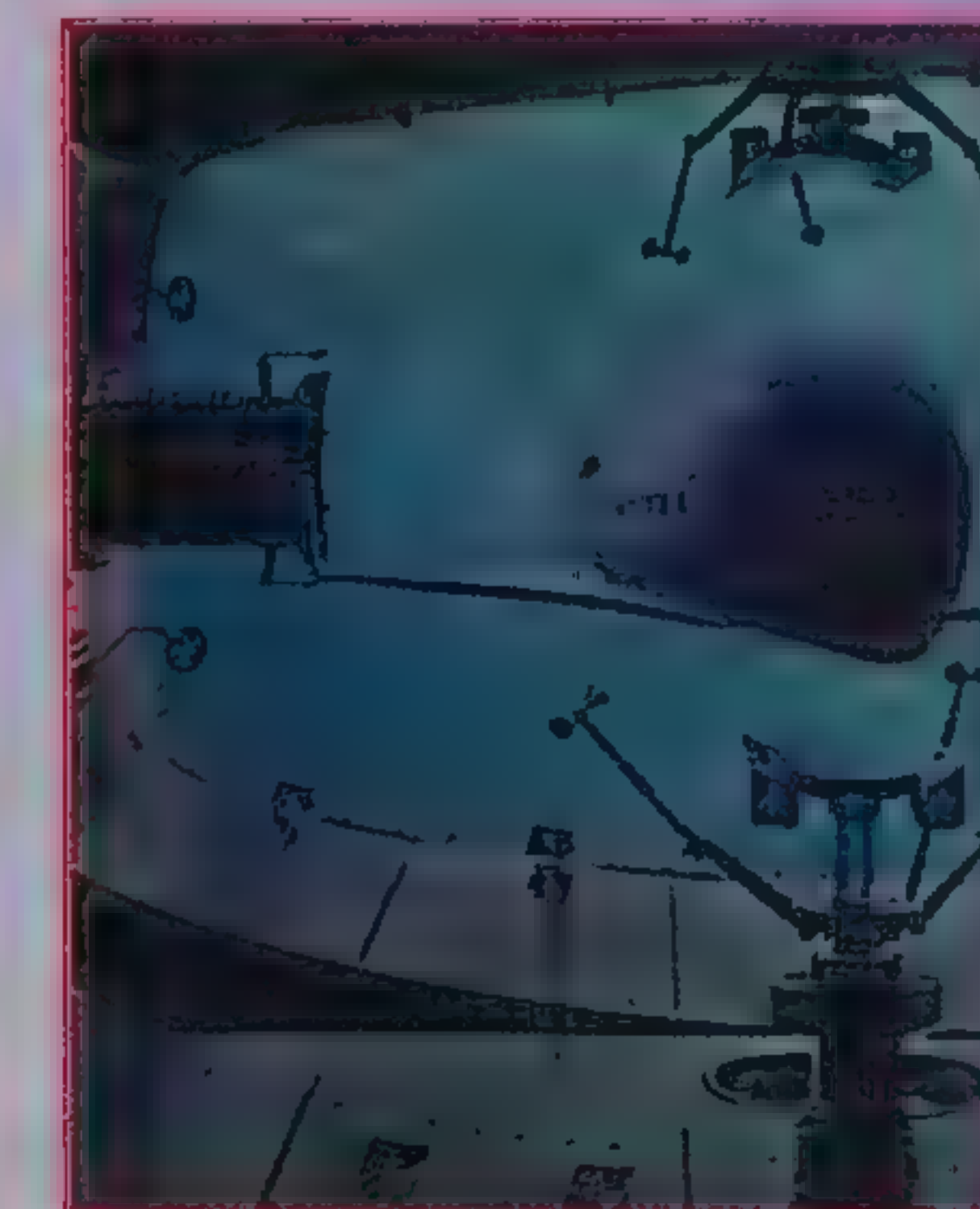
'On the Lunar Surface'—Robert McCall.



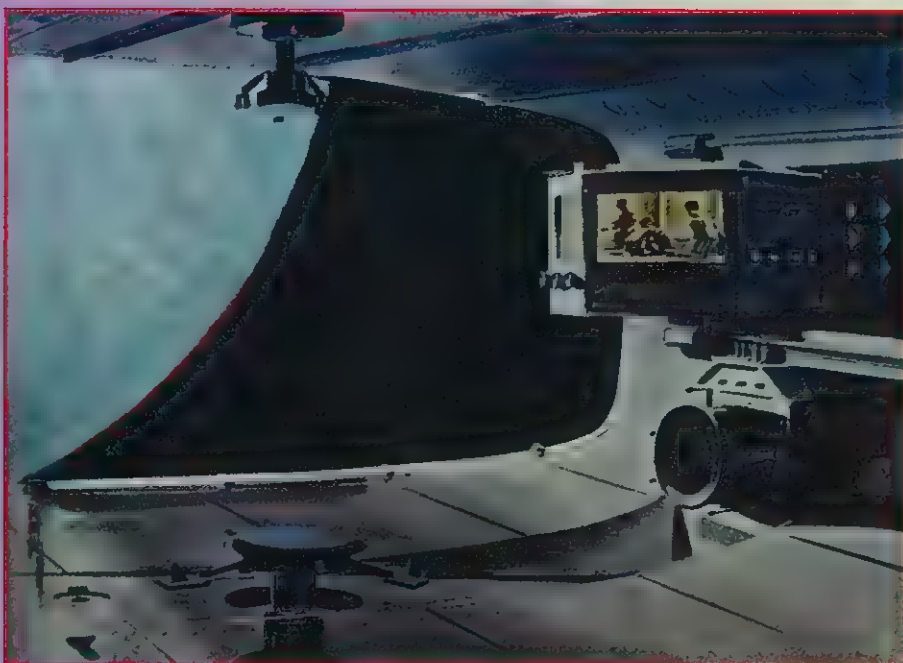
glorious painting of a dart-shaped spaceship rocketing from a huge space station orbiting above the Earth; a group of space-suited surveyors at work on a landscape unlike any previously surveyed.

Kubrick, with his artists and production design team, had been busy perfecting what an extra terrestrial future should look like a full two years before any of us saw the results. From that period they left behind some memorable examples of speculative art which are remarkable for many things, but most of all perhaps for the fact that they have remained virtually unseen. It is known that the director took steps to ensure that few of the items produced so painstakingly and expensively for the film survived to fall into the hands of imitators and would-be successors, but his effectiveness in achieving that means that a great deal of fine work has never been given the attention its quality justifies.

At least seven paintings have been reproduced from this pre-release period, every one of them a fascinating study of some aspect of the film which later became familiar, although often in markedly different form. The *Moonbase*, seen in the distant background of the lunar surveyor scene mentioned above, is captured in two fine depictions, one at ground level showing living and working quarters in a form resembling golf balls cut in half and a lunar transport rather more basic and functional in form than the sleek *Moonbus* used in the film. The other view is an aerial shot, showing the early constructions laid out almost in plan form.



Other images this page: early pre-production artwork.

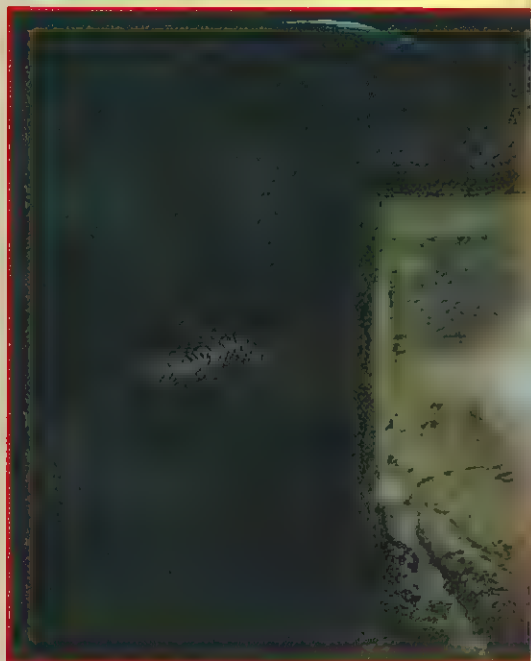
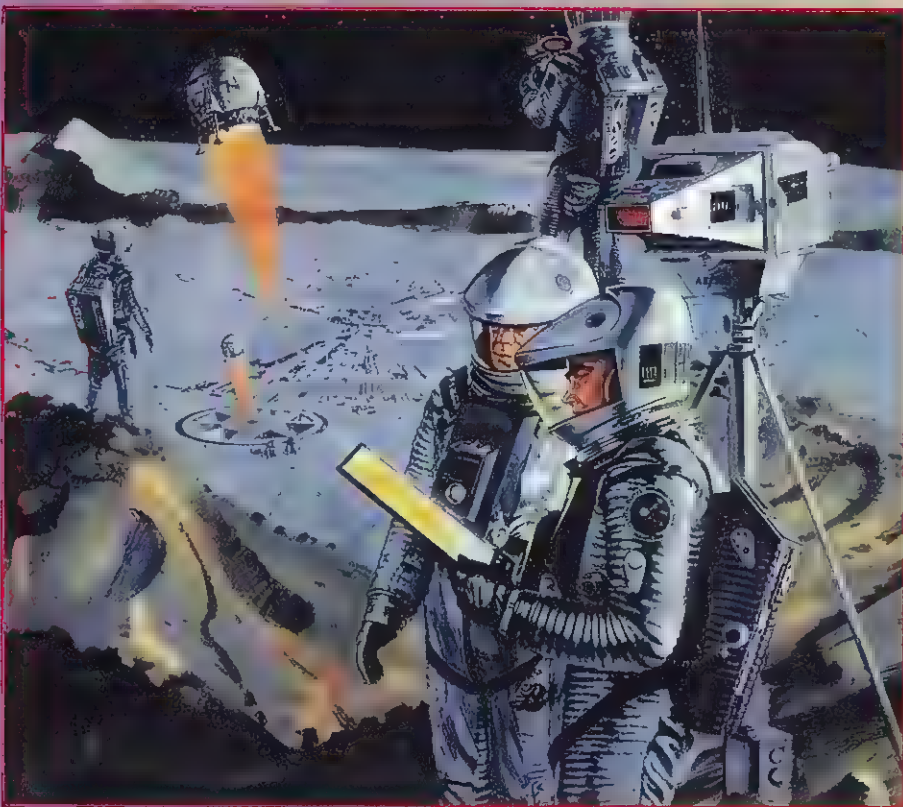
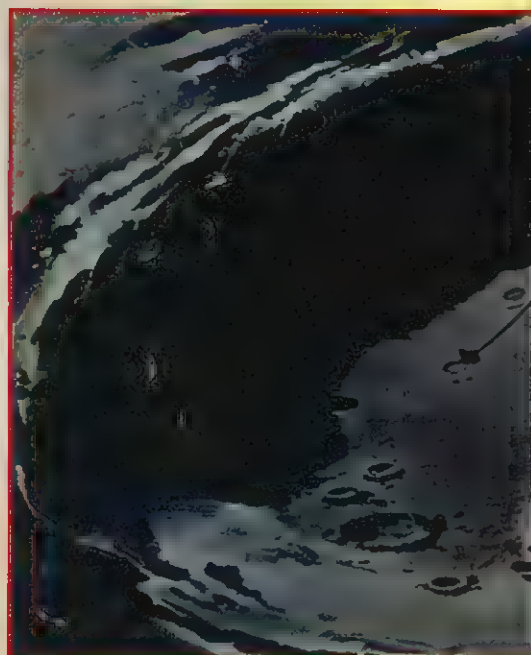


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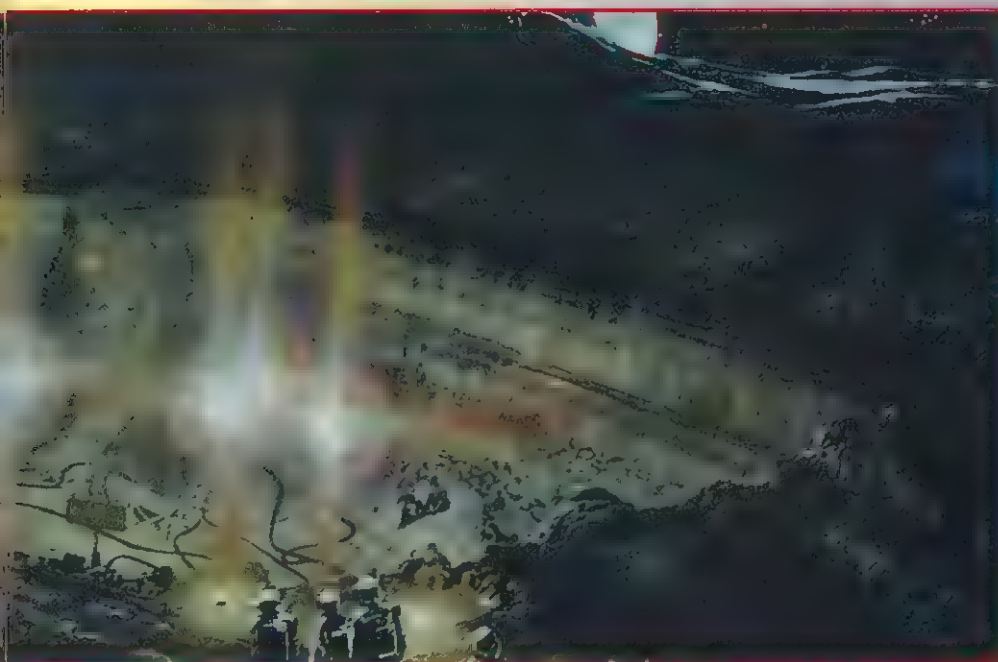
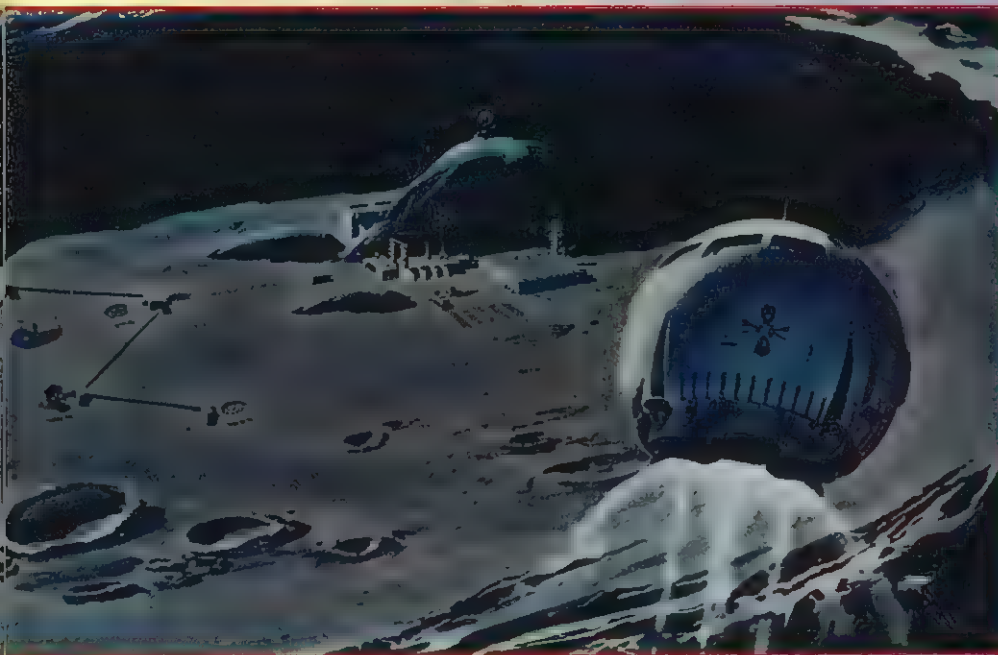
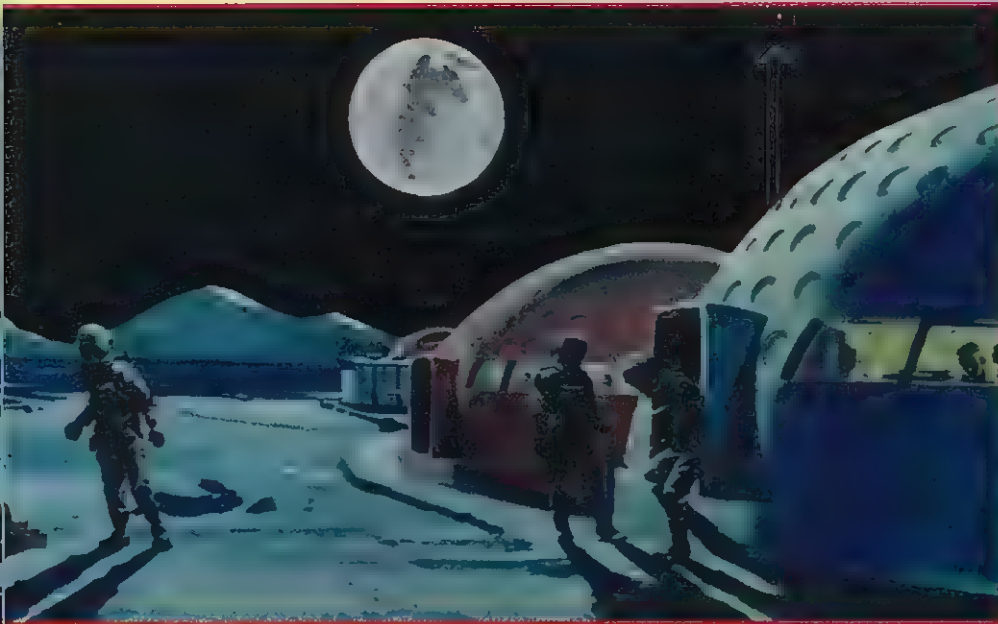
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Other images this page:
early pre-production artwork.

Other subjects include early workings of the *Space Station* and *Discovery* (both recognisable, but destined for considerable changes before their final appearance), and a spectacular scene showing the arrival of the *Orion* at the *Space Station* from inside the docking area.

Interestingly, some of this early work shows an originality that was, if anything, subsequently toned down for general consumption, and it is a shame so few people ever had the opportunity to see any of it. I do not know whether any of the originals still exist.

The Inspirers, Inspired

Kubrick and his team were clearly, and inevitably, under the spell of the great astronautic artist Chesley Bonestell (1888-1987), whose work was a huge influence on many, not only those actually involved in the early years of space exploration, but perhaps more importantly for the future, a whole generation of space-hungry youngsters. Clarke himself wrote a glowing tribute to Bonestell's work, which illustrated Willy Ley's *Conquest of Space*, published in 1949. Perhaps if *2001* had never happened, childhood memories of gazing in awe at Bonestell's almost photographically realistic depictions of the universe as seen from distant planets would have given us some of the same inspiration we drew from Kubrick. The *Space Station* in the film, and the dazzling scenes of the *Orion* approaching it,

are clearly heralded in his 1952 work *Final Frontier*, which features a station with remarkable similarities to the one in the film orbiting above the Earth with a rocket ship in close proximity, just as we see the *Orion* in Robert McCall's famous painting of that scene from the movie (see below).

I have never come across any reference to Bonestell being considered as a possible artist for Kubrick, although he was responsible for breathtaking 'space-scapes' in earlier SF movies, and it would be surprising if the idea had not occurred to Kubrick. It is possible he consciously decided to look for younger talent to help him achieve his desire for original, scientifically-feasible effect, and the artist he *did* select was certainly less well known at the time. Nonetheless, Robert McCall captured in his oil paintings the very essence of what the director was striving to achieve.

Robert McCall

With only four large canvases (or, more precisely, *Masonites*, a kind of board especially suitable as a base for oil paintings), his work, if not his name, became familiar around the world and remains today among the most widely seen, admired and loved of all SF-based art. MGM donated the originals to the *National Air and Space Museum* in Washington, D.C., where they still 'live'.

Stepping Into Space

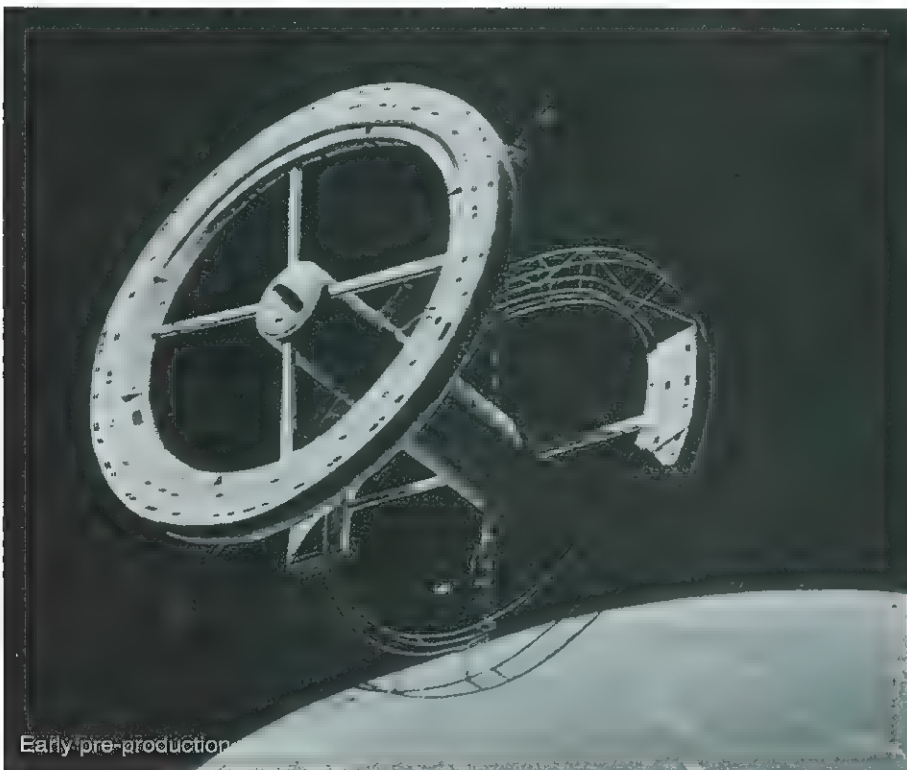
Two of McCall's paintings in particular, created during and after the artist's visit to the outer London studios where Kubrick was filming, and reflecting his close examination of the models on which he based his work, have been accepted as effectively the 'default' images of *2001*. The original soundtrack LP cover made even more widely known his painting of the *Orion* leaving the orbiting *Station*. The jet trail may be scientifically questionable in view of Kubrick's determination to make this the most realistic SF film ever, but I doubt whether anyone holds that against the artist. The promise of the future has perhaps never been so vividly portrayed as in this stirring scene of humankind's ultimate technological creation floating high above planet Earth.

In some reproductions of this work, which was officially copied in slightly different forms for various purposes, a second *Orion* can be seen waiting to line up for entry to the *Station* after the departing craft has reached a safe distance. And, ever since 1968, many people around the world have gazed wistfully at that scene and wished themselves on board that craft on its approach...

Surveying the Universe

The other scene that has become central to the enjoyment and inspiration we feel when contemplating McCall's work is the group of space-suited surveyors at work on the lunar surface. In the foreground we see two men conferring over some kind of plan. Behind them a third figure takes photographs of the arriving and departing *Aries* lunar craft, while a fourth figure simply gazes in the awe that all of us feel to see the huge manned base spreading across the floor of the crater. Close examination of this work reveals an astonishing level of detail typical of McCall, so easily missed in the overall magnificence of his scene.

"In my paintings," said McCall, "man is of secondary importance to what he has done and built... The starring role is played by his great achievements... My paintings work best when they have some reference to reality, even if it's a symbolic one. When I paint space... I want to get inside it, get closer to it... to consider things that are awesome, mysterious, and unbelievable. And, of course, the universe is that..."



Being There

The two works described above have been reproduced in many forms, perhaps most notably as three-dimensional, lenticular, images. Both were made in postcard-size versions, and they are striking enough, but the even rarer larger versions (produced in two sizes) are surely among the most spectacular space scenes ever produced. Looking now at the lunar survey scene before me, the two men in the foreground float in front of the plane of the image, and the picture recedes into the distance with such breathtaking reality that it is not at all difficult to imagine yourself as an on-the-spot observer. You could reach out and draw the men's attention to some detail on their chart; you might listen in to their conversation.

Apart from noting the word *Japan* on the reverse of the postcards, I have no knowledge of production details for these pieces. As with so much else to do with *2001*, they remain the equal of any corresponding items produced at any time since 1968, and are understandably highly prized by collectors. The obvious question is, why nobody has followed up the lenticular images with actual three-dimensional dioramas.

Although McCall's other two works are less widely known, they are every bit as spectacular as their companions. The scene of life inside the *Discovery* centrifuge is virtually a schematic of everything we see in that part of the film. Through McCall's eyes we see the entire circumference in a single vertical sweep, a wider angle than any in the film. Finally, the face of *Dave* framed in his *Spacepod* window, leaving the relative comfort of *Discovery* behind on his way to his ultimate destiny, gives us all a thrill of the remoteness, the literal out-of-this-worldness, of what we see.

Inspiring Beyond

Outside of the superlative work of Kubrick's production design team and Robert McCall, many artists, both professional and part-time, have continued to draw inspiration from *2001*. In recent years the availability of sophisticated graphical art media has added new scope for expression. This article cannot attempt to describe this work and its creators in any detail, but I have selected a few to represent those contributing to this realm of creativity.



'Orion leaving Space Station'—Robert McCall.

One remarkable thing about work done by artists and craftsmen based on *2001* is not simply the consistently high quality, but the fact it exists at all. Nobody can ever have got rich by modelling *2001* subjects. The huge global popularity of 'those other' SF movies justifies production of tie-in products on a mass scale and keeps the accountants of the big film producing companies happy. In comparison, work based on 'the' SF movie has more an appearance of a cottage industry. If anyone sat down and researched the market for such items the results would probably scare off anyone with a reasonable helping of common sense.

Dawn of Man Diorama

Jim Hudson, as far as I know, is not a professional artist; he is 'just' one of many moved by *2001* to express his own feelings about it by creating a diorama powerfully effective in its simplicity. There is no attempt to literally reproduce what we see in the film, and for me that is one of its attractions. Copying scenes does not add to the store of resources about and reflections on the film, but an individual view can make us think further about some aspect of a movie which already generates a wide range of philosophical speculations. In Jim's case some stones, a wrinkled piece of cloth, a piece of glass or perspex and a suitably-austropithecine-looking

figure are all he needed to create his contemplative piece. In fact, the transparent *monolith* is what we would have seen in the film if Kubrick's initial plans had worked out. The only reason it eventually became black is that it was technically impossible to create something transparent that big with the necessary unblemished optical quality. Clarke, of course, also uses a transparent artifact in his novel of the film.

Over the years there have doubtless been many such examples of creative expression fostered by the film, most of which have probably never been seen publicly. It is worth bearing in mind that, for each of us who has our own thoughts about what *2001* 'means', there are hundreds if not thousands of others who are inspired in their own ways, and many have committed themselves to some form of physical expression.

Kits and other leisure—market products

In contrast to Jim's personal statement, *Aurora*, one of the then leading manufacturers of plastic assembly kits, is one of two or three firms which brought out models based on subjects from *2001*. Perhaps the most sought-after is the *Moonbus*. Advertisements for these kits often appeared in *Superman* comics and

suchlike around the time of the film's premiere.

Lunar Models have been making and selling assembly kits based on science-fiction and fantasy subjects for many years and have included various items from **2001**. I am sure no modeling enthusiast will need introduction to their work. Known for their kits of the space hardware from the film, they have also turned their attention to the more philosophically-inspired scenes, exceptionally well captured in examples such as those centered on the *monolith*: in one case, a spacesuited figure touches the *monolith* in wonderment, while on the opposite side *Moonwatcher* is doing exactly the same thing—four million years, divided by an impenetrable barrier that represents something more vast and ancient than either observer can comprehend.

One of the most unexpected but effective graphical representations of images inspired by **2001** is that created by artist Roy Carnon and sold in the form of a circular jigsaw puzzle marketed under the *Springbok* label. It takes the form of seven separate illustrations combined into the overall design, and although all are of recognisable scenes from the film they are rather more than literal reproductions. There is a particularly dramatic view of the *Orion* entering the *Station's* docking port, a view of *Discovery* approaching Jupiter from a most effective and unusual angle, and a fine study of the *Moonbus* in flight. The puzzle was released to tie in with the film's premiere. There are indications that Carnon's work may have been done before full details of his subjects became generally available, but that in itself adds to rather than detracts from its impact.

Simon Atkinson

Simon Atkinson's meticulous work for Piers Bizony's 1994 book, *2001: Filming the Future* (the most thorough coverage of the film and its making ever put into print, and due for re-release in an updated edition at some point soon after the appearance of this article), was the result of countless hours of painstaking investigation, analysis and reconstruction of scenes from the film, as well as consultation with some of the people who were actually involved in the original designs, including Frederick I Ordway III and

Harry Lange (both of whom are still active).

"The movie was burned... into my consciousness at the age of eight," writes Simon. "I was pretty well convinced that much of the hardware must have been built as it was so realistic. It was pure magic..."

Simon recalls some of the scenes which so affected him: "... the first glimpse of *Orion* climbing away from Earth; the *Space Station* spiralling toward the camera... (the) *Aries*... touchdown (my favourite shot of the entire film) the legs compressing, then bouncing back... *awesome!* The... *moonbus*, travelling... across the moonscape. The *Discovery* full view, *Poole* in the cockpit... the exquisite sound of the hatch closing just slowly enough [to] see it as the camera follows *Bowman* around the centrifuge. The shot of the *Pod*, after catching up with *Poole*..."

The perfection of what Kubrick showed us brought "a lump to my throat," continues Simon, and "made



'Space Pod leaving Discovery'—Robert McCall.

me want to recreate the vehicles in such a way that that 'feel' would be transferred into two dimensional illustrations as if the movie images had been flattened into plan form. It was also important to me to recreate these craft *EXACTLY*... nothing less would do."

Asked about the intricate detail in his work, Simon reveals: "I added very little, some detailing to *Orion* and *Discovery*. I became very obsessive about the tiniest detail... I got to the stage where I wouldn't complete a view until I found some evidence of

'that' detail... I even ended up measuring off the TV screen... *crazy!* ...The *Aries* required most interpretation in order to show the window details, mixing the model shots and the interior set info."

It is, perhaps, inevitable that, with a perfectionist like Kubrick, there is some perverse satisfaction to be felt in discovering things he got wrong (though the director himself was unlikely to ever admit such things—when invited to attend *Cyberfest*, the event staged at the University of Illinois in early 1997 to celebrate *Hal's* 'birth', as recorded in the novel, Kubrick's response was to the effect that in the film *Hal* clearly stated that he became 'operational' in 1992, so it was a bit late to be marking his birth in 1997!). Simon, naturally, had plenty of opportunity to notice details such as: "The stewardess in *Aries* goes through the wrong door to get to the cockpit... She should go through the door directly above. Goddamn!"

Tony DeLuca

...Is one of the most talented of the digital graphic artists to emerge in recent years, inspired at an early stage by **2001**. His work has the power to evoke some of the same responses as the film itself. "Being a bit of a perfectionist myself," writes Tony, "I found it a great challenge and delight to recreate something in 3D that Kubrick himself would be pleased with."

Tony first captured the attention of the **2001** audience with his brooding memorial to the director, created following his premature death early in 1999, and followed it up by combining a number of images from the film to create a superb and evocative graphic, titled *Sentinel 21*. He remarks that this "is my tribute to Stanley Kubrick—and to the film that I feel is the pinnacle of his career... It's a symbol of man's constant curiosity with the universe."

Writing of his own hopes as to how people will react to his work, Tony has it in mind that they should "feel an overwhelming sense of quality and attention to detail. The highest compliment would be to know that people are guessing whether or not it's a frame from the film, or a totally hand-crafted 3D image."

One of my own closely-guarded criticisms of **2001** was that Kubrick's magnificent lighting gave us a view of

remote space considerably brighter than would in fact be the case. Some of DeLuca's work gives us, I would suggest, a more realistic impression of the reduced level of light a space traveller would experience. How dazzling his *Pod* lights appear to us; yet how puny they seem, how tiny, in a cosmos we can still only comprehend from our Earth-bound viewpoint.

Another point I think is illustrated both by Tony's work and words is the potential still available for originality in interpreting the film. So powerful is the influence of the objects we see, and so strongly ingrained are the links binding Robert McCall's works to the film itself, that artists have often concentrated fully on simply re-representing them. But **2001** is so much more than a mere display of hardware that there is surely scope for interpretative, as distinct from representational, treatments of Kubrick's themes.

J. L. Ayuso

Jose-Luis Ayuso is the latest artist/craftsperson to come to my attention, inspired by **2001**. His work is rather different to most other subjects based on the film: namely, the creation of reproduction space suits, scaled down to fit *Action Man*-type figures. (article in a future issue Ed.). Just being publicly released at the time of writing, these pieces take to another stage similar products dating from the early '70s manufactured by the Spanish company, *Madelman*. The latter items are very scarce and eagerly sought by collectors.

J. L. Ayuso, appropriately, also hails from Spain and spent more than a year creating his new suits. The level of detail and authenticity are a real tribute to his dedication and skill. It is not perhaps obvious in the film that there are two different 'patterns' used in the space suits: the silver types worn on the moon, and the coloured suits used on board the *Discovery*. J. L. Ayuso has faithfully reproduced both, and shared some of his thoughts with me about what inspired him to put so much effort into his work:

"Well, the film has been my favourite since I saw it in 1978... I was *SHOCKED!*... At the end, I was flying! My friends didn't like it at all, and I couldn't understand that!"

He was familiar with the *Madelman* products:

"My connection came from playing with them as a child. They were my favourite toys...the **2001** astronaut, being a toy, and quite crude...got the 'spirit'. It's very well done, quite respectful with the original. I can't understand how they (were able to create them) before VCRs and DVDs..."

In closing

As indicated before, this article makes no attempt to describe the full range of artwork based on **2001**. My aim has been to describe a range of subjects to convey something of the creative scope offered by this unique film, and share some of the artists' own words to reveal their thoughts and intentions in bringing their work to



2001 suit by J. L. Ayuso.

life. This has never been an 'easy' film in any sense of the word, but the challenge of interpreting it has been taken up by these people and many others over the years. Each of them has added to a story which began more than three decades ago, when Kubrick first set out to create that real science-fiction movie.

As the year 2001 metamorphoses from future speculation into everyday reality, the director himself has passed on, and we find ourselves perhaps no closer to the universe he envisioned than we were when he

started. But even when **2001** becomes the past, people will continue to derive inspiration from the unforgettable images he left behind.

My acknowledgements apply not only to the artists referred to in this article, but to the many people who have expressed their admiration for Kubrick's masterpiece in so many ways. I am sure Tony DeLuca speaks for everyone committed to the continuing tribute to Stanley Kubrick's **2001: A Space Odyssey**:

"The essence of **2001** will never be totally captured in any art form other than the way Kubrick presented it, however, it will always be a special challenge and honor to try to do so."

Special thanks to Simon Atkinson, Tony DeLuca and J.L. Ayuso for the time they spent answering questions for this article. You will, of course, want to know more about them, as well as other people referred to in this article, and their work.

More of Simon Atkinson's work can be seen at:

<http://www.underview.com/2001/artwork/artwork.html>, and Simon may be contacted through underman@underview.com

Tony DeLuca's company is Digital Canvas, and you can see many examples of his work at <http://www.digitalcanvas3d.com>. His *Sentinel 21* graphic can be seen at <http://www.underview.com/2001.html>

J.L. Ayuso's *Twinch Squad* is illustrated and described in detail on his own web site: <http://www.mundicom.com/nexus/2klprevg.htm>

Quotations by Robert McCall are selected from *Robert McCall, Illustrator*, an article by Patricia Allen Dreyfus, published in the March 1971 issue of *American Artist* magazine, copyright © by *Billboard Publications, Inc.*, New York.

Ron Miller is both a renowned astronomical artist and the man responsible for the *Chesley Bonestell Space Art* site at http://www.crosslink.net/~blackcat/PAGE_1x.html. Thanks to Ron for providing a transparency of Bonestell's *Final Frontier* which,

Notes:**HAL**

Some people may be puzzled by my reference to *Hal*, as distinct from *HAL*, when addressing 2001's computer. I am taking my cue from Clarke's novelisation, in which he states it was: "...the highly advanced *HAL 9000* computer, the brain and nervous system of the ship...*Hal* (for Heuristically programmed ALgorithmic computer, no less) was a masterwork of the third computer breakthrough." (Arthur C. Clarke, *2001: A Space Odyssey*, chapter 16, Hutchinson, London, 1968)

Clarke refers to 'it' as 'Hal' throughout the book, and I see no reason to do otherwise. It is not an initial-letter acronym as such, and is not (officially speaking!) a backhander directed against *IBM* (which is an initial-letter acronym), as is so widely supposed. Incidentally, that explanation of the origin of *Hal* is the answer to what ranks as easily the most frequently-asked question relating to 2001.

"Ooh, and a cuddly Hal toy..."

The *Generation Game* was BBC Television's popular game show in the early 1970s. The winning contestant was given a minute to recall the contents of a moving conveyor belt of prizes—what they got right, they took home. The conveyor always held an easy-to-remember soft toy, hence a catch phrase of the time: "...ooh, and a cuddly toy...". I have always wondered whether a cuddly *Hal* toy would have helped soften his image as a cold, calculating mechanical killer.

unfortunately, could not be included in this article.

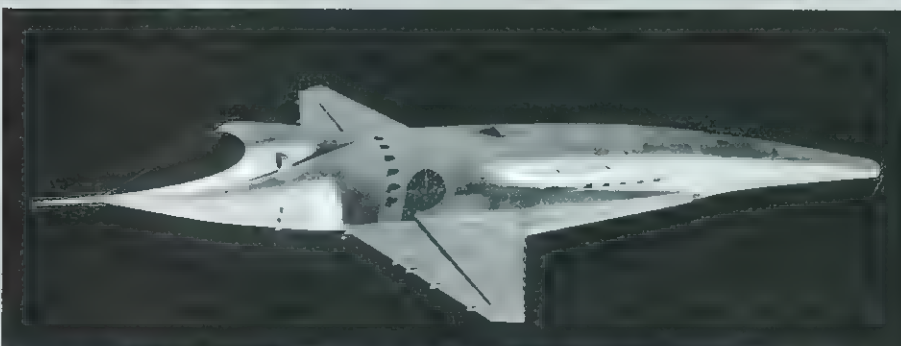
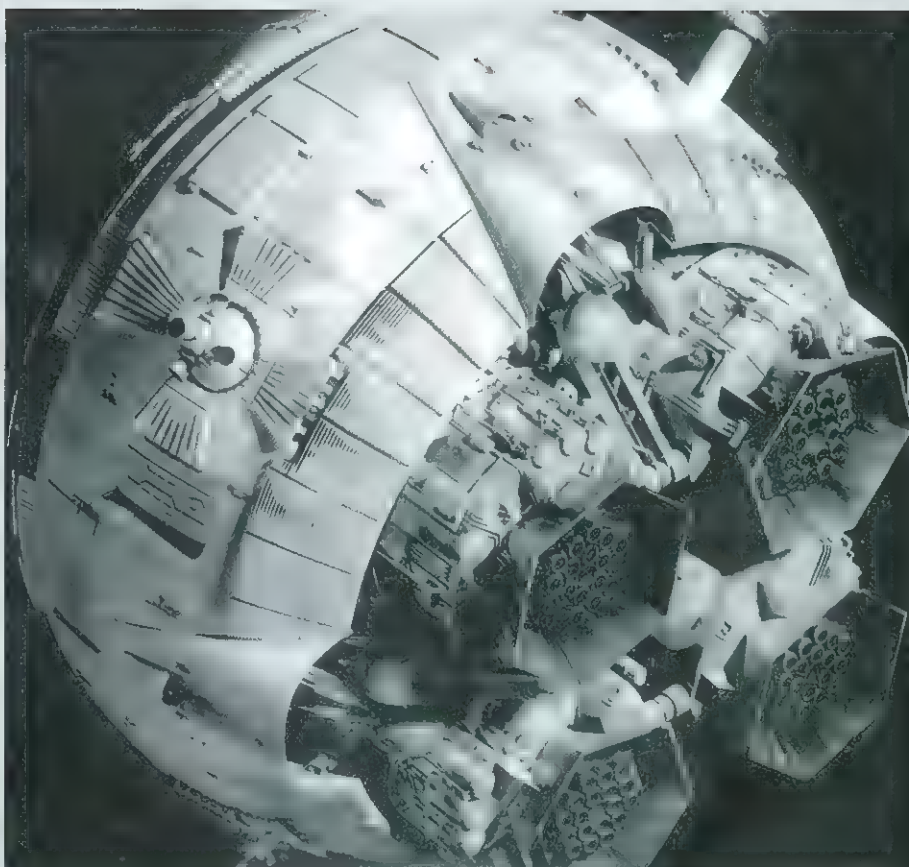
I have taken the liberty of describing Jim Hudson's diorama despite having been unable to contact him in recent times. Jim, please get in touch!

Finally, a plug for myself. Since 1995 I have spent thousands of unpaid hours investigating 2001. My only explanation is that, having first seen the film on its premiere run in London in 1968, I finally had to admit that I was never going to be able to free myself of the effects of that experience. The results can be seen in my web site, <http://www.underview.com/2001.html>. You will find more information and illustrations there covering many of the things described in this article, including some of those marvellous examples of artwork produced by Kubrick's team back in the mid-1960s.

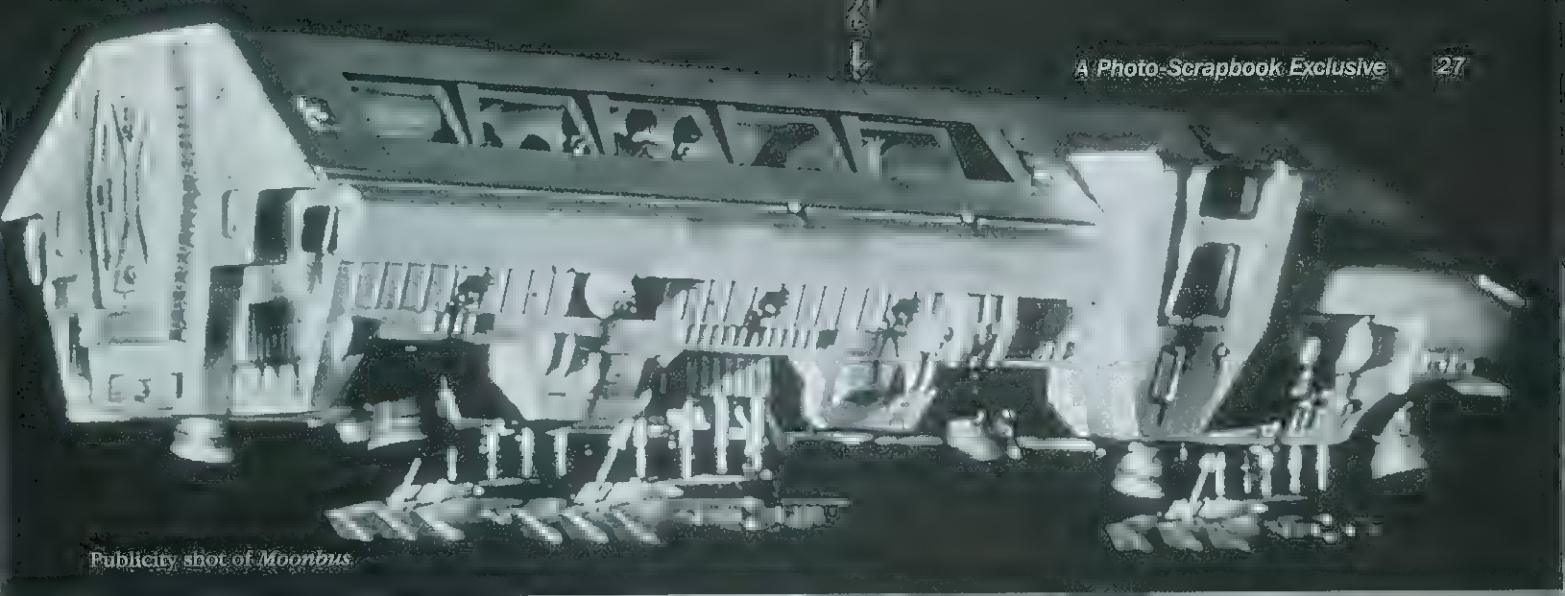
E-mail: underman@underview.com
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Top: *Aries* miniature on mounting rod. Joystick hand grip from *De-Havilland Vampire*—used on the *Moonbus* interior set and (in a modified form) as an E.V.A. propellant guidance control device on the chest unit of the *Discovery* space suits. Six of these were supplied to 2001 by aeronautical supplier Mike Shaw. Above: Publicity shot of *Pan-Am Orion*.

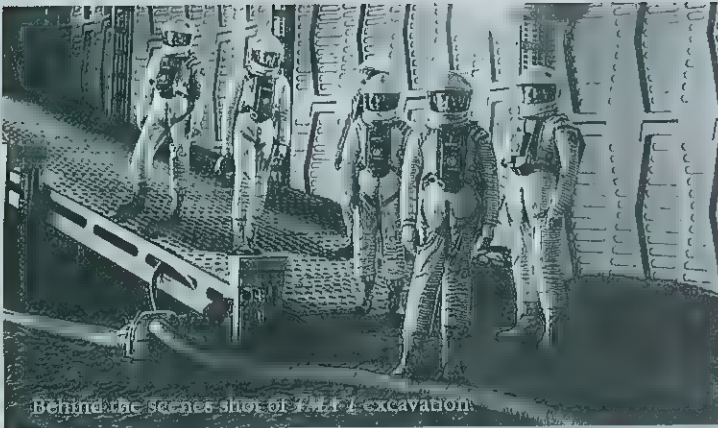


Publicity shot of Moonbus

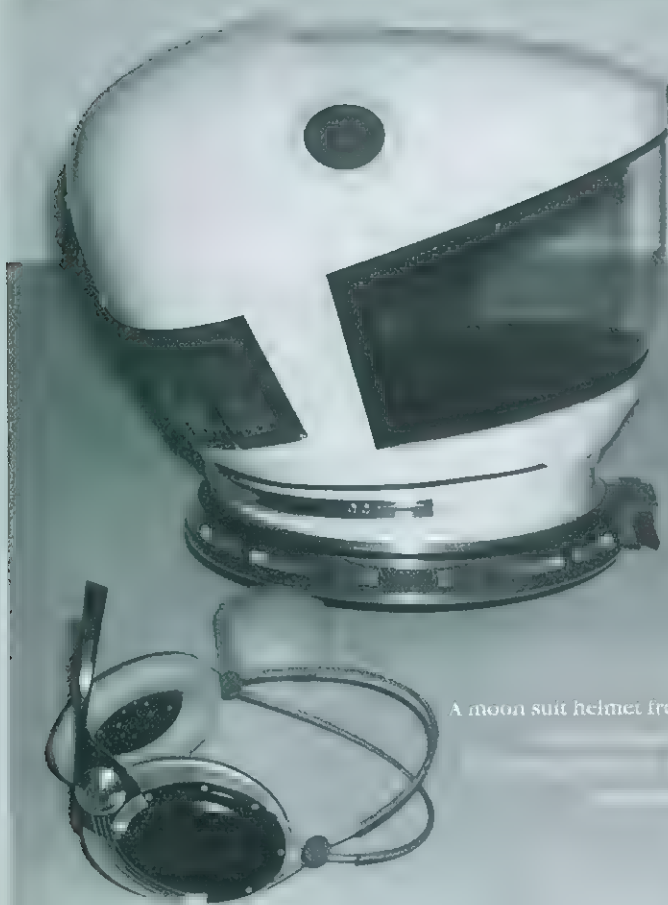
2001:

Phil Rae

A Photo-Scrapbook Exclusive



Behind the scenes shot of F.M.I. excavation



A moon suit helmet fresh



final

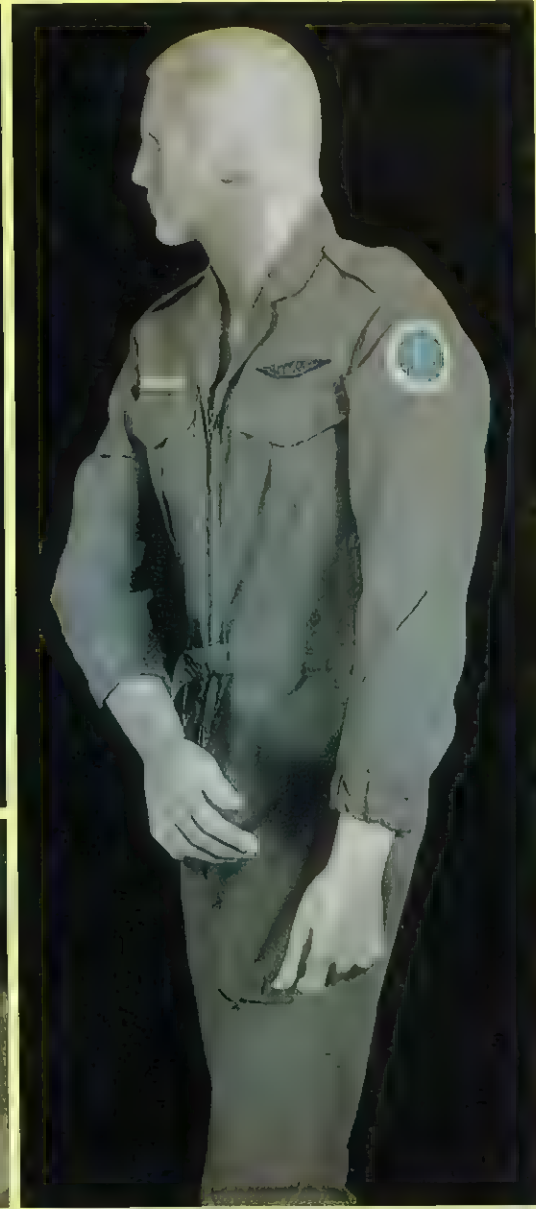


Publicity shots of costume not used in film and Pan-Am stewardess costume.

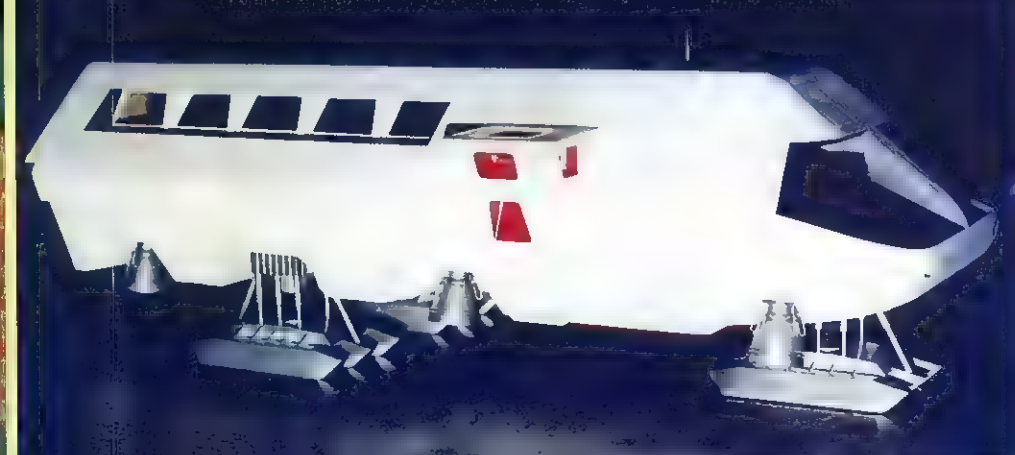


Moon suit and backpack (left inset) in *MGM* prop store during the 1970s. This particular suit was originally one of *Bowman's* and/or *Poole's*, but was subsequently re-painted for use in the scene where three astronauts are observing the descent of the *Aries* lunar lander.

This spread: various shots of the same suit (owned by a US collector) as it is today. Note that, although this suit has an arm unit, the buttons are a different colour to those used on the *Discovery* suit. This is the *only* moon suit that features the arm unit. The helmet and chest/back packs are the re-productions that were made for 2010. The boots (originally fireman's boots) were purchased from now defunct manufacturers *Tebbutt and Hall* and modified for use in the movie.



Moonbus miniature built by *Mastermodels* prior to detailing. Notice that, unlike the *Aurora* kit, there is no window glazing and there never was



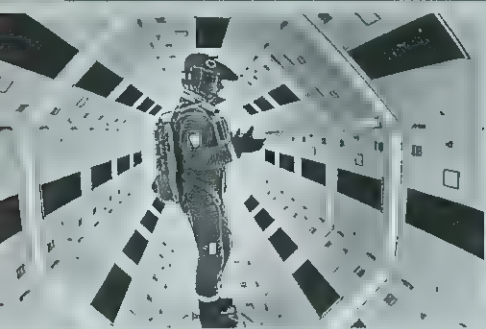
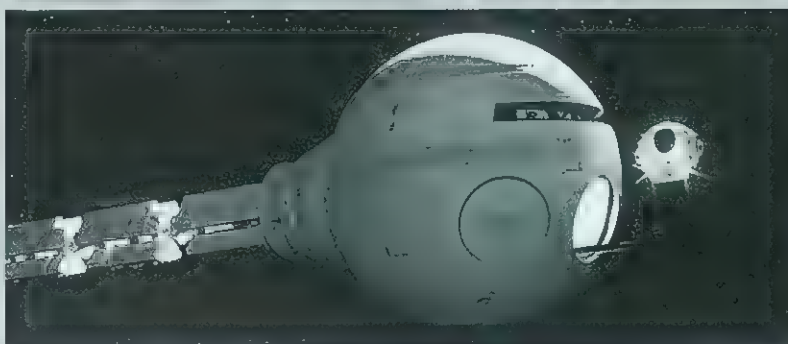


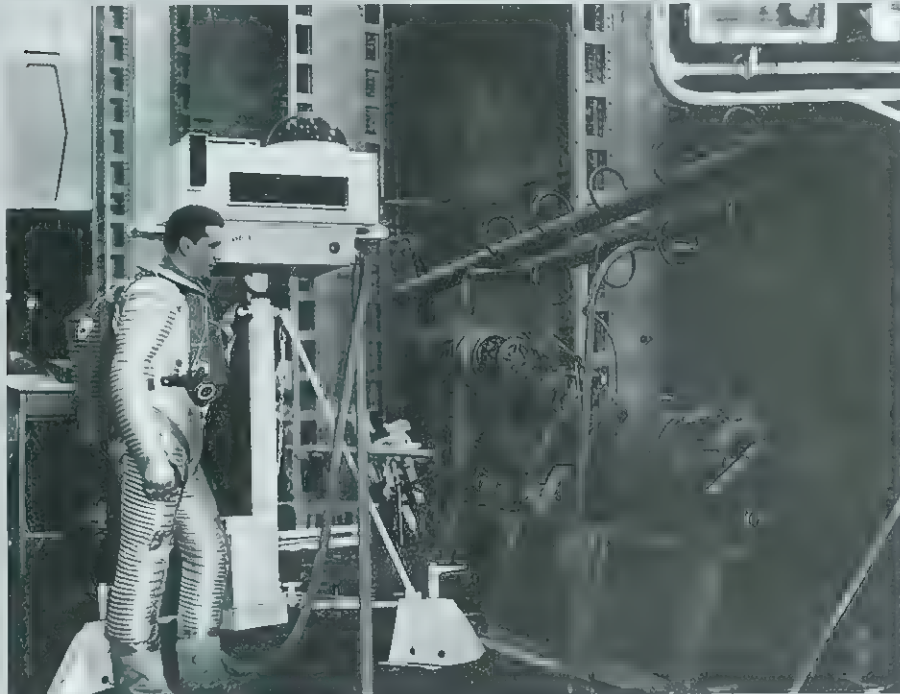
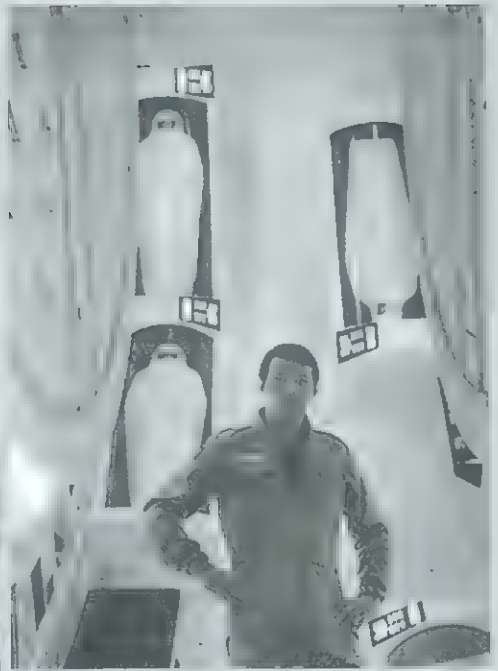
Left: *Mastermodels'* moon suit helmet showing separate headset.

Right: the 2010 helmet under construction. This helmet is probably modified from one of the helmets used in the movie *Titanic* which, in turn, seem to have been made from a helmet from 2001. Below left: 2010 helmet on display at *Top Secret* in the *Hancock Museum* in Newcastle Upon Tyne, U.K.

This page: various scenes cut from the final print.

Bottom: rare '60s 2001 toy.





Top: Arthur C. Clarke in the *Discovery Pod Bay* set; top right: Gary Lockwood in centrifuge set; centre left: behind the scenes of *TMA-1*; centre right: Kubrick lines up a shot over the shoulder of Gary Lockwood; above left: Keir Dullea on centrifuge set; above right: six foot *Space Station One* miniature.

Photos courtesy of Phil Rae. Publicity shots copyright © 1968, 2000 MGM and Turner Entertainment. All copyrights acknowledged.

A Commentary on 2001: A Space Odyssey

The Collectible Exhibit by Dennis Gonzales

story: lee shargel • photos: mark watson and lee shargel

It's been over thirty years, yet I still remember that night. The theater was so quiet you could hear the sticky tack of cola syrup as it tugged at your shoes under the seats. The year was 1968 and I was invited to a special screening of a new motion picture in New York. The movie that had just played out across the screen was Stanley Kubrick's 2001: A Space Odyssey. The reason for the quiet was simple; everyone was in awe.

What we had just experienced was a motion picture unlike any that had ever been seen before or would ever be seen again. Since that day, not **Star Wars**, **Star Trek**, **Starship Troopers** or any other sci-fi film has come close to the scope and vision of Arthur C. Clarke and director Stanley Kubrick. **2001: A Space Odyssey** was a ground-breaking achievement in motion picture history. It made everyone who saw it think. To this day every time I watch people watch the movie it's always the same. As with religion and politics, there are no answers to the questions, no resolve to the arguments posed by **2001**.

The movie had a profound effect on the lives of everyone who saw it for the first time. For me it was an epiphany. I knew right then and there what I wanted to do—become a writer of science fiction. Although it took nearly twenty more years to realize that dream, it *did* become reality and, in 1997, I had the honor of being compared to the great Arthur C. Clarke by the *New York Times* with the release of my sci-fi novel, *Voice in the Mirror*.

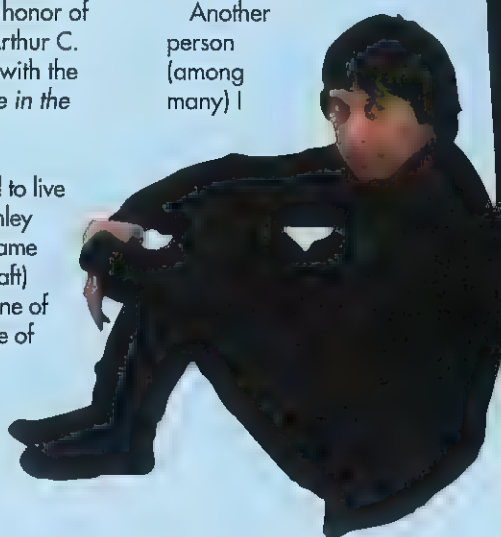
I had another legacy I wanted to live up to and it was simply that Stanley Kubrick and I both went to the same High School (William Howard Taft) in the Bronx, N.Y. and he was one of our most famous alumni and one of my personal heroes.

2001 broke the mold when it came to sci-fi. Here

was a movie that, for the first fifteen minutes, had not one single word of dialogue. Yet it spoke volumes to everyone who watched it. Stanley Kubrick was a genius director who was not afraid to tread 'where no one had gone before'. His film style was amazing. Take, for example, his heretofore unheard of jump-cut from the prehistoric stone age to the boundaries of outer space. Film schools across the world still use that amazing piece of film, in which the ape creature hurls the bone into the air only to have it transformed into an earth orbiting nuclear bomb.

Another person (among many) I

have met who was inspired and touched by this cinematic masterpiece is a gentleman named Dennis Gonzales of San Mateo, California, USA. He is a young man who is not



Dennis Gonzales with 7 foot replica of the Monolith

Original *Space Station One* seating used in the movie.

only living his dream but has elected to share it with the millions of people worldwide who also were touched by this movie. Dennis has spent years gathering information and memorabilia from all over the world in order to create an exhibit that transcends the average museum-going experience—*2001: A Space Odyssey*, *The Collectible Exhibit*.

If you should happen to be in the San Jose, California area in the year 2001, this exhibit is a must see. See details at the end of this article on how you can visit this exhibit.

2001: A Space Odyssey was, of course, based on the short story *The Sentinel* by Arthur C. Clarke. At the time of its opening hippies (like myself), intellectuals and those still on the fence raved about this technological achievement. The critics were not so kind. They attacked the film as being the \$40 million dollar folly of one man, Stanley Kubrick.

As Dennis Gonzales, so eloquently described it, "You either loved it; hated it; or you just didn't understand it." I couldn't agree more. Even the studio heads at MGM didn't know what to

make of the film. "How do we classify this thing?" they asked. At the time they couldn't decide if they were watching the company's biggest financial disaster or the greatest motion picture ever made. At press reviews in New York, Washington, D.C. and Los Angeles, the critics were

equally puzzled and perplexed at how the movie should be classified. After all, what they expected to see (to them the title, **2001: A Space Odyssey** suggested an action film in outer space) was a swashbuckling, romantic, action adventure with love, hate, battles, (and, of course—*resolution*) among the stars. What they got was one man's multi-million dollar prophecy of the evolutionary and technological future of mankind. No one had ever tried that before. Only Stanley Kubrick could pull it off. With his artistic and cinematic vision of the evolution of man from ape-like scavenger to galactic explorer, his design for the movie transcended every sci-fi movie that had ever gone before.

The Exhibit for a New Millennium

Dennis Gonzales's *2001: A Space Odyssey Collectible Exhibit* testifies to that fact. He has amassed quite a number of collectibles and memorabilia from the film for the event. His introduction to the film came in 1969 when, as an eleven year old boy, he ventured into the realm of Kubrick's movie. As Dennis put it, "From the moment I saw the film I knew I was





changed. The effect on my being was so profound. As a young man I was touched by the sound, the art and the message of the movie. I wanted to get everything I could that was related to **2001: A Space Odyssey.**"

As word went out, Dennis began to piece together the posters, photos, models and furniture that represent this milestone of motion pictures. Collectors of **2001** memorabilia gladly donated portions of their collection for the *Exhibit*. I am sure everyone can recall the dinnerware used by *Dr. Frank Poole* and *Commander Dave Bowman* as they ate their microwaved space meal aboard the *Discovery*. Dennis was able to acquire a set for the exhibit. Another fine example of Kubrick's vision of the future was depicted in the furniture on the space station. Called the *Djinn* sofa and chairs, they were designed by Olivier Mourgue. They are also an integral part of the Exhibit. Shown here are the actual sofa and chairs used in the film. They are owned by famous voice actor 'Weird' Wally Fields of Wally's *Weird Voices*. He is a voice actor heard the world over and famous for his voice-overs on such notable CD/ROMS as *Star Trek: The Next Generation*, *Birth of the Federation* and *Mechwarrior III*.

Everything about **2001: A Space Odyssey** was unique for the era in which it was shown. At the time of its release the United States was embroiled in a war no one wanted in Vietnam. At home, unrest was evident on every college campus. The Cold War was in high gear and the race to the moon was at fever pitch. Technology was poised to explode as the next revolution in computers and communication was set to permeate the lives of everyone on earth. Kubrick and co-screenwriter Clarke had a vision for the future and it was made evident in the film. Although to some it seemed more than a little pessimistic and paranoid, the point was driven home. In an interview with New York critics, Kubrick defied his detractors to place a name on his film. He was adamant when he said "...the movie was never intended to be explained with mere words. The medium is the film and in **2001**, the message is the medium. I tried to create a visual experience, one that bypasses verbalized pigeonholing and directly penetrates the subconscious with its emotional and philosophical content." He wasn't kidding!

With **2001** Kubrick demonstrated not only a new way to make movies, but a new way to watch, listen and *think* about movies. He had taken the movie going experience and raised it ten notches. It

was like sitting in a museum and staring at a Picasso. You really had to think just to make sense of what you were looking at. But it was certainly worth the effort. When **2001** first opened it was shown in Cinerama theaters. The fore-runner of IMAX, Cinerama used three cameras to project the film onto a large, curved screen. At the time it made you feel as if you were right there in the picture. Broadcast with stereo sound, it was an experience that required the use of all of the senses. I sat in the front row, right in the center of the theater. The experience was mind-blowing and one I will never forget. Dennis Gonzales seems to have captured that same feeling with his *2001 Exhibit*. The memorabilia, models, books and posters display every facet of the motion picture and the objects-de-art it has spawned.

The Dawn of Man ...and a New Age in SFX was Born

From the moment the picture began everyone knew they were in for something different. Albeit, they didn't know what that difference would be. As it turned out, most people felt it was a requirement to see the movie several times just so they could fix their own interpretation to it. Of course this was a strange new phenomenon. The executives at MGM were ecstatic. Never before had a movie engendered so much discussion that people felt compelled to see it over and over again. I saw **2001** several times myself that first year it opened. It was the topic of discussion on campus, in dorms, on street corners and just about everywhere else. The movie did something to the collective psyche of an entire generation. It made us wonder about ourselves and our place in the universe.

Yes, and it did foster some rather heated arguments on religion and the

existence of a higher power. For the first time it also transcended the literal world and made us think that perhaps there was an intelligence out there that we knew nothing about. Was it benign? Was it evil? Was it something so completely different there could be no name or verbal explanation for it, as Kubrick explained it? My opinion is, yes.

2001 is movie that must be absorbed, in a sense, by our senses. Rather than try to explain it in minute detail, the movie must be interpreted on a higher level. More so in how it made us feel to see those ape-like creatures before the *Monolith*. From the *Dawn of Man* we searched for a higher meaning to our existence. We scraped our way up the evolutionary ladder in so many violent ways only to reach some higher, more benevolent purpose. Dennis Gonzales's *Exhibit* allows us to stand there, in front of all of the symbols of this great motion picture and, once again, to dream.

As I looked at each replica I considered how far we have come in the fulfillment of that dream so vividly played out in the screenplay of Kubrick and Clarke. I examined the detailed model of a Jupiter bound *Discovery* spacecraft, saddened a little by the fact that the original prop used in the film was destroyed. Nevertheless, thanks to Phil Lublin at *Lunar Models* we can all have an exact replica of the original. (Catch the *Lunar Models Story* coming in issue 51).

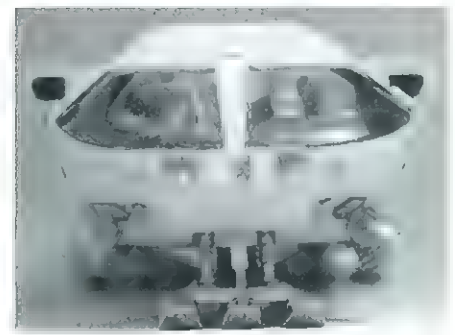
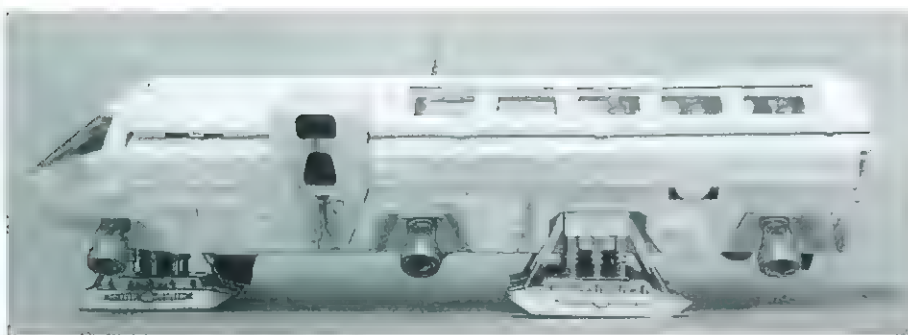
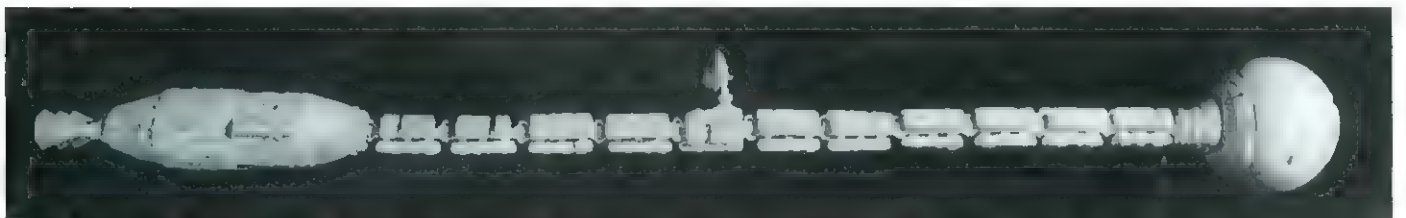
With this film a new era in special effects was ushered in, including fantastic vistas of outer space as seen during the *Orion's* voyage to an Earth orbiting space station, from the interiors of the *Orion* to the flight attendant's Zero G uniform displaying the not-so-discreetly placed logo of the now defunct airline, *Pan Am*.

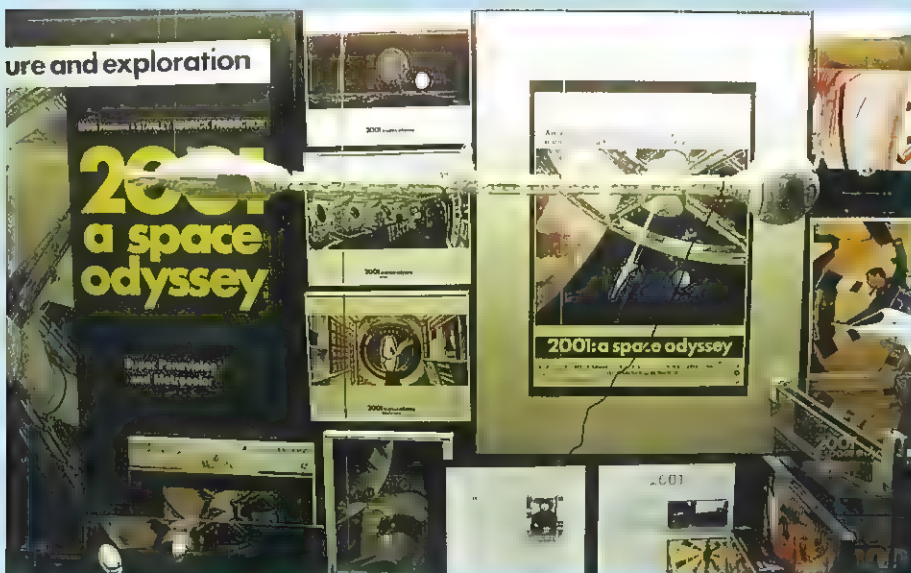
As a side note, I can recall *Pan Am* offering for sale tickets on some futuristic flight into orbit if and when it would become a possibility. I believe the cost in 1969 U.S. dollars was a mere \$20,000.00. The special effects in the film heralded so many things that today are commonplace to most of us.

Fly Me to the Moon in a Miniature Moonbus

The film had its share of spectacular spacecraft. As *Doctor Floyd* dozed off the *Aries 1B* spacecraft prepared to make a computer controlled landing on the moon. With the landing grid lights blazing and the dome retracting the *Aries* made her descent. With gear deployed and moon dust spraying in the vacuum, it slowly put down on the hydraulic platform. Here was an example of a special effect miniature that would make any model-maker proud. The detail was superb, right down to the striations on her white exterior. The *Exhibit* displays this a detailed *Aries*—a replica, yes, but who cares? This is a model that has spanned the ages and still remains popular with kit builders today. Probably the finest models on display belong to model-maker Scott Alexander. Scott is the guy the model makers at *Industrial Light and Magic* call upon when they want someone to build them a model. Now that's a reputation that needs no introduction. (See *Scott Alexander's 2001 kits reviewed by the Garage Kit Professor elsewhere in this issue*).

The trip to *Clavius* was executed in superb cinematic style. As the crew prepared to embark on their inspection of the dig they took a few moments for a snack aboard the *Moonbus*. Here was another example of Kubrick's SFX genius. The *Moonbus* miniature was a beautiful work of the model-makers art and Dennis





Gonzales's 2001 Exhibit includes a replica of the movie moon ship. This model was constructed by Dennis and both interior and exterior are impeccably detailed. Mark Watson's photos depict the ship at the exhibit as well as a few special effects shots of his own.

Is That a Monolith in Your Living Room?

No exhibit depicting the science and science fiction of **2001** would be complete without at least one replica of that black icon of mystery: the *Monolith*. It was probably the quintessential character in the film—with a starring role and not one line of dialogue. Of course it spoke volumes to our imaginations as we questioned its origin and meaning.

Regardless of what it means, it certainly served Kubrick's purpose in that it made us *think*. His use of cinematography to shoot scenes from the base of the

Monolith with the Moon eclipsing the Sun and Earth was a stroke of genius—an image made for million dollar poster sales. Of course, having a *Monolith* in your living room is a guaranteed way of breaking the ice when company comes calling. The 2001 Exhibit also has the *Monolith* on display and, as Dennis Gonzales put it, "It still caused as much controversy today as it did over thirty years ago when the movie first introduced us to it."

18 Months Later ...a Computer Named HAL 9000

From the *Dawn of Man* to the Moon and *Clavius* base and on to Jupiter, Kubrick takes us on a journey to the outer reaches of the solar system. It is here he pulls the camera back to simulate movement of *Discovery* through space. Slowly we are taken for a ride along the spacecraft as the camera pans from the command module and around to the full length of the ship.

Slowly we move back until we reach the engine nacelles and see the ship move off into the darkness of space. Another miniature of superb construction. In 1968 we could believe it was real. The Exhibit has on display a reproduction of *Discovery* designed, sculpted and molded by Phil Lublin of *Lunar Models* and constructed by Dennis Gonzales. I purchased one of *Lunar Models'* kits of *Discovery One* for myself. I hope to build it with a moving satellite dish, opening pod bay doors and EVA pod-extension, interior fiber optic lights and a replica of Poole and Bowman in a diorama I am going to call *Open the pod bay doors, HAL!*

The Jupiter mission, although not explained completely in the film, (Kubrick cut that from the original movie) did have more than its share of intrigue, mayhem and, yes, murder—perpetrated by a wayward and totally paranoid computer, the HAL 9000 series, who defied the three laws of robotics. (I wonder if HAL knew about them?) I also wonder if we are correct when we call him a *he*. After all, HAL was just a *machine*, wasn't he? It? Oh well, *more controversy!* As the scene opened HAL seemed helpful enough. Even playful as he engaged Frank Poole in a rousing game of chess. I think there was a clue here. His psychological head game with Dave Bowman was another giveaway. And yet I never saw it coming. When the communications array was set to fail, it was really HAL's way of saying "I think a few Kilobytes are out of kilter here guys." The amazing sets, the rotating command deck, the *Pod* bays and, of course, HAL, all added to one spectacular smorgasbord for the eyes. Kubrick used every technique available (and some invented just for the film) along with state-of-the-art camera and special effects to bring this science fiction dream to cinematic reality. Much of what we first saw in that film is today a reality. From the phone card used by *Doctor Floyd* to put in a long distance call to his daughter from the space station, to the successful *Galileo* probe that visited Jupiter only a few years ago. Clarke and Kubrick were visionaries—way ahead of their time.

The Paradox—"Open the Pod Bay Doors, HAL!"

The scene was shocking and stunning in execution. Unexpected, perhaps not. After all, HAL did read lips. As Poole's body floated off into space, a shocked and dismayed Bowman raced to his rescue. How many of us missed the fact that he wasn't wearing his helmet that first time we saw the film. You can bet HAL knew. Dave wasn't coming back inside

that ship if HAL had anything to say about it. But Kubrick wasn't about to leave his human hero high and dry in the vacuum of space. He had other plans. The scene was an explosive one. One of the best in the film. Man against machine.

I have to tip my hat to Dennis Gonzales. His *2001: Collectible Exhibit* captures the reality of the film in every detail. From the props and prop replicas to the actual on set photos of the action as it was filmed, to the fantastic model miniatures of the *Orion*, *Aries 1B*, *Moonbus*, *Discovery One* and the *EVA Pod*. It drew me into the movie again in a way I could never have imagined.

"It's Full of Stars!"

No other motion picture engendered so

much adoration for a medium as **2001**. It made us wonder where we stand in the stream of time; made us ponder what might lie before us. I think more than anything it was *entertaining*. All controversy, arguments about cosmic meaning and spiritualistic metaphor aside, it was just a *really good movie*. That is what Dennis Gonzales has placed before us in this collection of memorabilia. The artwork and attention to detail of people who can only be classified as fans of a great film. Yes, the Exhibit is *Full of Stars*, assembled in a wonderful format for everyone to enjoy.

My hat goes off to all contributors to the exhibit: Phil Lublin of Lunar Models, Mark E. Blunck's posters, Wally Fields for the furniture, Dennis Gilliam for the space

suits, Actor Gary Lockwood (Doctor Frank Poole), Mark Watson for the fabulous photos and, most of all, the coordinator for the entire exhibit, Dennis Gonzales, for the years of painstaking work that went into making this exhibit a reality. Now Dennis, "I honestly think you ought to sit down calmly, take stress pill..."

NOTE: You can access Dennis Gonzales's website, as well as all of the other sites devoted to the science and science fiction of **2001: A Space Odyssey** please log onto www.scifiman.com and follow the **2001** Links.

Photos copyright Mark Watson, 1999; Lee Shargel, 2000; Tom Sieler, 2000.

In the Garage with— Scott Alexander's 2001: A Space Odyssey Kits

story and photos: lee 'The Garage Kit Professor' shargel • models: scott alexander

I was first introduced to Scott Alexander by Dennis Gonzales. Scott hails from California and has been making his own model kits for over fifteen years. They are exact, highly detailed and well worth the money.

These are not your run of the mill styrene model kits. Here are subjects capable of being built to museum quality standards. Of course a lot depends on the modeler's skill level and patience. Not that there is anything wrong with the kits, it's just that you will really want to take your time building these beauties.

It started with a company named AURORA

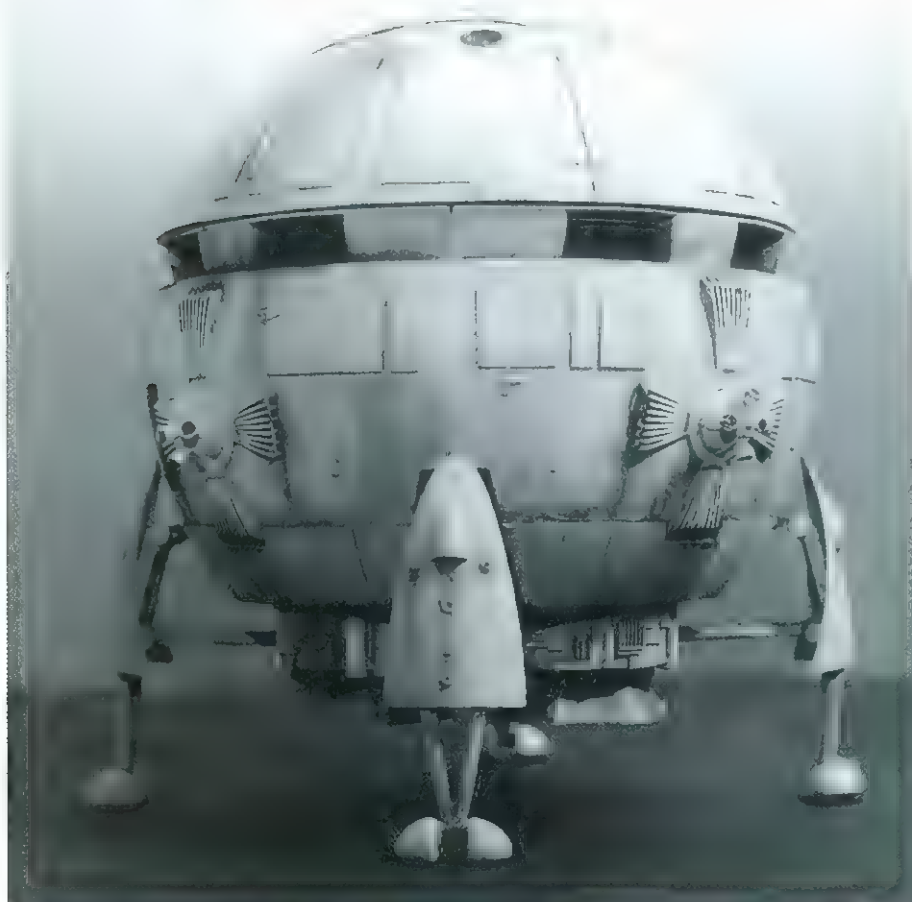
For most of us crazed modelers (you older modelers know what I mean) it all started back in the sixties when a Hempstead, New York company called Aurora began producing kits of the most famous monsters of the movies. *Frankenstein*, *The Wolfman*, *Dracula*, *The Mummy*, just to name a few. At about \$2.00 a kit they were the most popular models around. Today those same kits can sell for over ten thousand dollars. If we'd only known *then*... Anyway, that's another sad story. Back to Scott Alexander, who began his model molding

career around 1985. His first project was making reproductions of the most sought after Aurora kits. He would acquire an original, make molds of all of the parts and recast them in resin. Then he would package them in a hand-made box and cover this with laser color copies of the original artwork.

Needless to say, they sold like hotcakes. Modelers were ecstatic. Here were exact replicas of the original Aurora models being sold at a fraction of the collectible cost. In fact, they were so cost effective you could buy two, build one and save the other. Business was

good. Too good! Scott also worked in the motion picture business as a visual effects artist and he didn't have a lot of time to be making molds, casting kits, making boxes, etc. Yet he continued to produce Aurora reproductions off and on for the next five years. When he ran out of monsters he decided to create his own designs of popular kits. His first project was the *Norman Bates* house from the movie *Psycho*. It was a superbly detailed model and Scott took it a step further by designing his own Aurora-style





Aries 1-B and below: Scott's box for the Aries and original Aurora Orion kit.

boxes... Only his box art stated, 'Models that Aurora Shoulda Made!' I laughed when I first saw what he had done and I agreed. These were subjects Aurora should have produced but went out of business before they had the chance.

Polar Lights and hi-tech garage kits

Duty called and Scott was called away to work on a film (**Baby's Day Out**) as the director's personal assistant. He had no time for models so he turned the business over to some friends. They made a decent go of it but, after a couple of years, decided to return the business to Scott. At the time he was very busy working on films such as **Sgt. Bilko**, **Terminator 2-3D**, and **Titanic**. Scott figured he would be busy in the movie business for years to come so he sold his patterns for the **Psycho** house to a (then) fledgling company called **Polar Lights**. If you buy the kit today, it will have been produced on Scott Alexander's molds. As Scott tells it, "Shortly after **Titanic** was finished the movie business in Los Angeles seemed to disappear. Everything, it seemed, was being filmed out of the country, so it looked like a good time to get back to my first true love, *making models*."

As time passed, Scott's modeling artistry turned to a subject that had intrigued him since he was a kid - the spaceships of **2001: A Space Odyssey**. He decided to break out of the small scale mold, so to speak, and started building larger, more detailed subjects. His first was the Aries 1B moon-lander. As he began his design, Scott noticed that (like many others of his generation) his eye-sight was not what it used to be. So he enlisted the help of Kurt Zandler, an expert pattern-maker who also shared Scott's passion for **2001**. The result was a beautifully detailed version of the Aries 1B.

The next project for Scott involved a highly detailed version of the EVA Pod. This kit used a unique, high-tech process known as stereo-lithography. I've used the process a few times myself to make one-of-a-kind masters and mock-ups. The process works by

using a laser to cure a special epoxy chemistry one minuscule layer at a time. As each layer builds up it is cured until you have a three dimensional part. To watch this process is to witness something that is truly amazing. Although it does save a considerable amount of up-front manufacturing time, there is still quite a lot of hand work that has to be done. Both kits are now being packaged in Aurora-style boxes but without the logo, which is now owned by Polar Lights.

As you can see from the photos, the EVA POD is spectacular. This model, which was also built by Scott, has tiny LEDs in the light sockets. As the shot shows, they add a great depth of realism to the kit. It would certainly look fabulous in my collection. Oh... I have to return it to Scott. *Too Bad!* Scott is now busy making plans for a large scale series of models from the movie. All of these kits are being designed to the exact dimensions used in constructing the original movie props. On tap are a 30" tall Aries 1B, a 42" Pan Am Orion, a 32" version of the Moonbus and a 13" EVA Pod. If you want to order one of these, you'd better do it fast. He's only making a limited number and they won't last.

Scott molds his kits, prints the detailed instructions, boxes them and sells them mostly by word of mouth. He also offers them for sale through the internet. If you would like to get your hands on one, or if you want to pre-order a movie-scale version, log onto www.scifiman.com and follow the links to Scott's website. Like the movie, **2001: A Space Odyssey**, Scott's kits will prove to be timeless.



...continued from page 18.

The Stargate: Beyond the infinite

"Once having traversed the threshold, the hero moves in a dream landscape of curiously fluid, ambiguous forms."

Joseph Campbell,
The Hero with a Thousand Faces.

The film's visual denouement is a dazzling array of light patterns which burst out from infinity over the alignment of Jupiter's orbiting moons. *Bowman* recovers a message from *Dr. Floyd* on the true purpose of the *Discovery's* mission to Jupiter and, upon his arrival, he pilots an *EVA pod* to the floating *monolith*. Eventually infinity opens up before him. At first the camera stays on *Bowman's* face as we begin to see light reflected on the faceplate of his helmet. We then cut to the *Stargate* itself— an immense flooding of color and lights. The effect of the *Stargate* was created by a process called *slit-scan photography*. Developed by Douglas Trumbull, slit scan is a process whereby color transparencies are photographed at an extended exposure rate and photographed through a 'slit' or mask in front of the camera lens. The camera is mounted on an animation stand, which has north, south, east, and west axis movement. **2001 visual effects cameraman** Richard Yuricich recalls the visually stunning 'slit-scan' technique developed by Trumbull:

"There was a large 'slit'—from a 16th of an inch to an 8th of an inch wide in front of the lens. Behind it was a giant light source. Between the lightbox and the slit was a series of gels (the artwork containing the various moiré patterns). The artwork was placed on a glass sheet and the glass was connected to a lead screw that would cause it to traverse east and west across the screen. The 65mm camera would be focused (on a track) on the slit and the shutter on the camera was left entirely open so the whole room had to be kept dark. The slit was then lined up in the center of the frame. The camera, with the shutter open, would wipe the imagery through that slit across the frame. So if you could imagine the camera from a distance at the end of the track and seeing this little slit off in the distance. Its height would depend on how much you cut-off on the slit. You would only see the amount of light coming through that slit."

Transparencies, which contained various color streaks and moiré patterns, were carefully picked and approved by the director for the initial shots of the gate. Technical animation specialist Jim Dickson, who worked with Trumbull on the film, explains his involvement in the



'slit-scan' rig. "I was assigned by Doug to help him build the slit scan camera rig and I did that using hand tools and the help of fellows in the machine shop on the lot at *MGM* London, Borehamwood, Herts. I built the equipment with Doug and the machine shop and photographed every frame that appears in the film as the famous *Stargate* sequence. This sequence, which is near the end of the film, became very popular with grass smoking kids in the theatres at the time. It was like a trip even without pot."

Dickson is also quick to clear up any misconceptions regarding who came up with the slit-scan technique. "Douglas Trumbull is the sole inventor of this system as I was there to witness that fact. Others have claimed that they did it first but I disagree as I witnessed what the others had done earlier and it was not the same as Doug's slit-scan." Subsequent shots in the *gate* featured valleys and vistas, which were photographically treated and manipulated with extreme chroma aberrations. Some of the visuals were created to depict massive dust and cloud formations. These were created by mixing chemicals together on sheets of glass that reacted in a wide variety of colors on contact.

Bowman is eventually drawn into the infinite by the *monolith*, which ultimately brings him into direct contact with the unknown intelligence. Inside a sterile white room decorated in regency motif, *Bowman* ages and ultimately evolves into the film's final and most enigmatic image, *The Star Child*. This striking final visual was the creation of sculptor Elizabeth Moore who fashioned the image to loosely resemble actor Keir Dullea on instruction from Kubrick. Her artistic talents were seen again in Kubrick's *A Clockwork Orange*. (Moore created the

Korova milkbar's statuary). Tragically, she died in an automobile accident in 1976.

An even more enigmatic ended was planned, one that involved an actual encounter with the absent extra terrestrials. "Early on we were planning to do a lot of other-worlds imagery," recalls Pederson. "For several months I had a cubby-hole on *Stage 5* next to Patrick McGoohan's office (he was shooting the TV series, *The Prisoner* at *MGM*.) I was just painting bush-league Chesley Bonestell landscapes as though we had all the time and money in the world to finish the picture. My wife—we met in the sculpture department at *UCLA*—started doing 'E.T.' sculptures with Stanley's wife Christiane at her studio in *Elstree*. Finally, Stanley decided we couldn't make a conventional story. The film was heading toward abstraction and anything else would have been like the old guru jokes atop the sacred mountain — 'You mean, that's it? Life is a fountain?...' Life ISN'T a fountain?'. So, ultimately, it was dropped."

2001 became the most technically complex film of its time and the visual effects turned out (to no one's surprise) to be the most difficult and time-consuming aspect of the film's long production. Recalls then *visual effects cameraman* Richard Yuricich: "I showed up for the last six months of photography and I noticed everyone was pretty worn out. I ended up working with the animation camera which at the time was being operated by Bruce Logan and Zorin Perisic. They needed a third cameraman because they started a graveyard shift so that it would be possible to have the camera working around the clock if need be. Most of the photography I did was element photography, moving stars—stars moving east, moving west, stars moving north and south, rotating and so on. The instructions and directions for (the star photography) came from (Con) Pederson. He had a total handle on what was needed each day. I would get my notes from Con, which specified what he wanted me to shoot. Doug, at that time, worked upstairs in the 'slit-scan' dept. The animation camera in my dept was a 65mm *Mitchell* mounted on a single column *Oxberry* stand. Nothing was blown up. The readouts were shot with a zoom lens with a 35mm camera but all the effects elements were shot 65mm."

Most of the techniques used hadn't been invented yet and the effects crews often had to improvise and experiment. Yuricich explains the very unique way the animation crew created their rotoscopes. "We had a large European slide projector which had a very narrow profile and we



used the light source on it to do the rotoscoping. We used a modified prism in the gate just to throw light. As long as you put the prism in the same place and you clamped the projector in the same place you were relatively 'right on' as far as line-up. It was jury-rigged very well for repeat usage. It was primarily used for line-up. You'd get the cels from the 'Blob' department with little targets drawn on top of them and then you rotoscoped those targets down to the tabletop so you would have a line-up."

The 'Blob factory' (named by Trumbull after the 'blob-like' appearance of the odd shaped mattes) is where the mattes were painted by hand by the effects crew. Those cels were brought to the animation dept and photographed on the animation stand with the 65mm *Mitchell* camera. Yurich explains the technique used to create the starfields: "For the stars there were 'blob' mattes made and when the stars were printed into one of the masters there was a bi-pack hold-back matte so that, wherever a ship or an object crossed over the stars, the 'blob' matte would hold back the exposure of the stars."

"The last year I was in charge of assembling all the loose ends, star composites, held-take marry-ups," recalls Con Pederson. "The big focus was the 'Purple Hearts' sequence, the colorized *Stargate* footage. Tom Howard, who headed the *MGM* lab, provided to *Hawk Films Ltd.* the space and operators for our night crew. Doug and I, and Jimmy Dickson, Richard Yurich, Colin Cantwell were employed by *Polaris Productions*. I had two assistants, Ivor Powell (who later became Ridley Scott's associate producer on *Alien*) and Brian Loftus, to assign specific shots, usually color wedges. We worked with color negative and black and white separation masters. There are no traditional opticals in the film—no dissolves, for instance. Just a lot of hand made mattes."

According to Jim Dickson it took quite a lot of experimentation and testing to get

the effects methodology in place.

"Working with Doug, I was responsible for sorting out some of the matte problems they were having as they had built up a big backlog of partially exposed latent shots. Time was passing and it was not good procedure so I performed some tests along with the help of Con Pederson and we developed all that film and did our remaining mattes and star fields on fresh stock and bipacked them later into the picture. As far as I can remember the optical shots in the film were very few if at all. All effects were double exposed or by-packed in registration printers or matte stands."

Visual effects shots and elements were screened nearly daily for Kubrick for approval and comment. Optical print downs to 35mm were made by *Technicolor* in London for editing and daily review. Dickson recalls one funny practical joke played on the normally unflappable Kubrick during one of the screenings. "Dailies were always fun; sometimes I would move things the wrong direction or make some stupid mistake. Stanley would yell from the back of the room 'Who did that?' and would proceed to humiliate me with verbiage. It was a pressure job although it didn't bother me as we would drive around town in *Mini Coopers* at lunch shooting 22 caliber starting pistols and having car chases to blow off steam! One day, I told Doug to have his gun ready during dailies as I had f****d up another scene. This one on purpose! When Stanley saw the scene which was the last one projected just before the lights came up in the projection room, he went nuts and yelled, 'Who shot that scene!!!!?' Doug jumped up and I jumped up and we both began yelling at each other, 'You did it!' 'No, You did it! You son of bitch!!! Take that!' -and we whipped out our guns and started firing shots (blanks) at each other and flaying around and falling all over the floor!! It was wonderful!! You know, I think it was the only time Stanley ever smiled during dailies."

According to many of the crew, Kubrick had a clear mind for how he wanted the shots to look and meticulously examined all the footage. "Stanley looked at everything, of course, and seemed to favor purple and yellow a lot, remembers Pederson. "One of his traits was a tendency to hit on and stick with very simple premises—such as the extensive use of white, diagrammatic composition without much concern for perspective, exacting detail for scale in every shot, demand for depth of field and sharpness even if it may have seemed overly crisp. Over his career—which is now, unfortunately, complete—his style was that of the still photographer watching the world for the right angle. In the frame, things take place. It is a bit static compared to the fast cutting, soft-edged hardness so many moviemakers have used since television quickened the pace. The fact that **2001** (and we ALWAYS pronounced it without an 'and one', by the way) is slow-moving with long shots underscores its resemblance to an art gallery experience, and not everyone goes to art galleries."

The one thing the **2001** crew is almost unanimously agreed upon is the level of excellence achieved by the effects crew, even with today's high priced digital factories turning out slick imagery as a yard stick. "I suppose by today's standards, with stepping motors and micro-processors, the world of motion control (where I o.d.'d in the seventies) one could view some of the procedures as awkward," muses Pederson. "Like using still projectors to roto 70mm mattes on cels, for instance (Stanley and Doug's solution.) But it's not important. It's like what an artist uses to mix paint on—a technicality. The challenging part is getting a visual concept that's worth looking at. Everything that goes into it is just nuts and bolts."

2001's lost music

Kubrick has always had an affinity to using pre-existing musical pieces in his films. Despite this Kubrick enlisted Alex North, whom he had previously worked with on *Spartacus*. However, none of North's music was ultimately used in the final cut of the film. Kubrick became entranced by the beauty of Strauss' *Blue Danube waltz*



and the Strauss classic *Thus Spoke Zarathustra* and decided to use these pieces to replace the original score. *Danube* seemed to him to match the elegant grace of the ships travelling through space to a 'T'. Despite North's absence from the film, his original score from the feature was released for the first time in twenty five years and is available on CD.

Kubrick was also introduced to the music of György Ligeti, a Romanian musician whose pieces *Atmospheres*, *Lux Aeterna*, *Adventures* and *Requiem* were featured prominently in the film most notably during the *monolith* and the *stargate* sequences. Kubrick was so enamored of Ligeti's haunting themes that he utilized his music again ten years later in the *Shining*.

World premiere and audience reaction

"In the history of motion pictures, a film occasionally has captured some moment of the human adventure in a manner to transcend its initial goal of entertainment. These films not only are long remembered but also become a vital part of our culture. In 2001: A SPACE ODYSSEY, Stanley Kubrick has created such a film. It offers entertainment in abundance. But no greater compliment can be paid a motion picture than to use it as a yardstick by which to judge other pictures in later years. 2001: A SPACE ODYSSEY is this kind of picture."

Robert H. O'Brien, President, Metro-Goldwyn-Mayer Inc, 1968 (from the forward of the 2001 souvenir book).

The World Premiere was held Uptown Theatre, Washington D.C., April 2, 1968. It opened across America to fairly indifferent reviews from critics (although some critics immediately praised it as one of the greatest films ever made). Although MGM had hoped to market Kubrick's film as a family adventure, it was actually America's counter culture youth movement which made the film popular. In some areas of the United States the film played for two years consistently—it was rare for a film at that time to play more than two months at an individual screen. The fact that 2001 is not always clearly understood may explain its success through repeat viewership. After an initial test screening, Kubrick had approximately twenty minutes excised from the film (which included interviews with some of the world's top scientific experts and space travel and scenes from the *Dawn of Man* segment). There are no current plans to reinstate any of the cut scenes. Kubrick has always maintained that the final theatrical release of the film was the one he was most pleased with.

2001 was not an instant hit at the box office but, eventually, viewers started queuing up for the feature after extremely good word of mouth began to spread about this unusual film. Teenagers and college students in particular were drawn to it by the psychedelic images in the *stargate* sequence which many viewers went to under the influence of hallucinogenic to 'enhance' the experience.

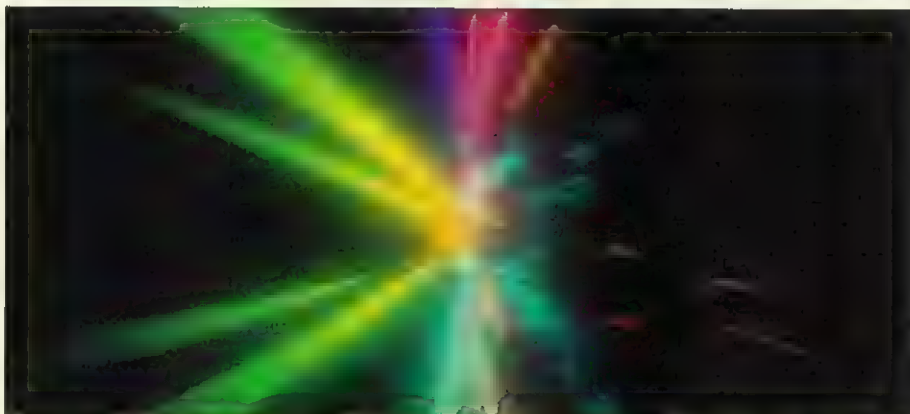
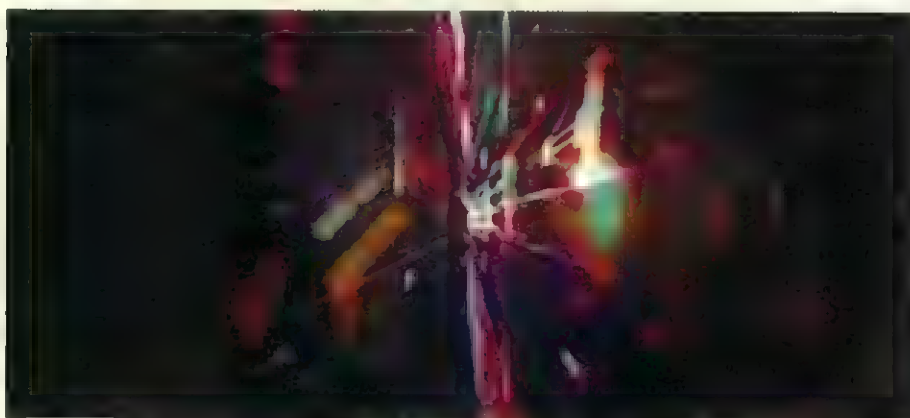
"It will be the only picture ever made after which people who have seen it will say that they have never seen anything like it—and they'll be right."

Kubrick's former production partner
James B Harris.

In 1968 the academy of motion pictures arts and sciences nominated 2001: A Space Odyssey for four Oscars including best screenplay (Arthur C. Clarke and Stanley Kubrick). Since the Academy at the time had a limit of only three names on the

ballot for technical awards (there were four supervisors on the film), it was decided the award would be given to Kubrick who was credited with the direction of the effects sequences. It also won the BAFTA award for Best Visual Effects in 1968.

Kubrick's perfectionism in regards to the film continued long after the feature was released. Richard Yuricich recalls a re-release screening in Westwood he attended with Doug Trumbull in the late '70s: "I went into an afternoon screening with (Doug) Trumbull and the print was horrible. Doug and I went up to the booth to talk with the projectionist to see what the problem was. Then we went outside to a payphone and Doug called Stanley in England. He said to Kubrick, 'They're showing (2001) here and the print is bad!' and the print was pulled the next day! That's the kind of relationship they had with each other. We went in to see the film and ended up checking the print!"



Class of 2001

"Nine long years we were busy, scheming and plotting and planning in every possible way, and only just managed it, thanks be to God!"

Homer's *The Odyssey*, Book III
What happened in Sandy Plyos.

Due to the overwhelming success of the film, many of 2001's crew would move on to have very prosperous careers in the film industry throughout the world.

The critical and financial triumph of 2001 gave *effects supervisor* Doug Trumbull an opportunity to direct his own feature, the science fiction cult classic **Silent Running** (1973). Trumbull later went on to direct **Brainstorm** (1983) and supervised the Visual Effects for **Close Encounters** (1977) and **Star Trek: the Motion Picture** (1979). His company, *Entertainment Effects Group* (with partner Richard Yuricich) created the visual effects for **Blade Runner** (1982) and **Brainstorm** (1983). He developed *Showscan*, a 65mm based special venue film format and directed the *Showscan* features *Let's Go* and *The Big Ball*. He directed the ride films *Back to the Future: The Ride* and the *Luxor's Search For The Obelisk* and has founded the *Entertainment Design Workshop* in Sheffield, Massachusetts. He was nominated for academy awards for both **Close Encounters** and **Blade Runner**.

Special effects supervisor Con Pederson still works in visual effects to this day. He is one of the co-founders of *Metrolight Studios* in Los Angeles. As one of the lead digital artist/designers he has created effects for hundreds of commercials. His many film credits include **Total Recall** (1990) and Tom Hank's epic HBO drama on the early years of NASA, **From The Earth to The Moon** (1998).

Director of photography Geoffrey Unsworth is considered one of the British film industry's finest photographers and his work on 2001 exemplifies this. His many credits include **A Town like Alice** (1956), **A Night to Remember** (1958), **Othello** (1965), **The Magic Christian** (1969), **Cabaret** (1972), **Murder on the Orient Express** (1974), **Superman: The Movie** (1978) and **A Bridge Too Far** (1977). During the filming of Roman Polanski's *Tess* (1979) in France, Unsworth suffered a fatal heart attack. **Superman: The Movie** is dedicated in his memory.

Production co-designer Anthony Masters continued to work as a production designer on such diverse features as **The Deep** (1977), **Dune** (1984) and **Clan of**

the Cave Bear (1986). He was awarded the BAFTA award for best production design (shared with Ernest Archer and Harry Lange) for his work on 2001. He passed away in 1990.

Harry Lange eventually settled in England and continued working in film as a production designer. His list of credits include **Great Muppet Caper** (1981), **Dark Crystal** (1992) and **Monty Python's the Meaning of Life** (1983). He also worked as an art director on **The Empire Strikes Back** (1980) and **Return of the Jedi** (1983). He was nominated for an academy award for both films.

2001 visual effects photographer Bruce Logan became one of the leading experts in visual effects photography. He was the director of photography on **The Incredible Shrinking Woman** (1979) and the groundbreaking visual effects film **Tron** (1982). He currently resides in Los Angeles and runs his own production company, mainly creating commercial work.

Jim Dickson, who worked as one of the film's *technical animation specialists*, went on to become a very successful director of photography. He has continued to develop elaborate camera systems and continues to work as a cinema-photographer. He runs *A. E. C. Inc* in Los Angeles where he has developed the new *CircleVision* 35mm multiple motion picture camera mounting system. It allows the creation of filmed and seamless wide angle shots of any width from 80 degrees and out to a full circle at 360 degrees.

2001 effects cameraman Richard Yuricich went on to become one of Hollywood's leading visual effects supervisors and cinematographers. His many credits include **Silent Running**, **Close Encounters of the Third Kind** (1977), **Star Trek: The Motion Picture** (1979), **Blade Runner** (1982), **Under Siege 2** (1995), **Event Horizon** (1997), **Mission Impossible** (1996), and **MI:2** (2000). He was nominated for an *Academy Award* for his work on **Close Encounters**, **Star Trek: The Motion Picture** and **Blade Runner**.

Effects cameraman Zorin Perisic went on to win an Oscar for his visual effects work on **Superman: The Movie** (1978) and a special achievement award from the *Academy of Motion Picture Arts and Science* for the creation and development of the *Zoptic* front projection system used on that same film.

Make-up artist Stuart Freeborn went on to create other fantastic make-up creations

in such films as **Superman** (1978) and **Star Wars** (1977) (he was chiefly responsible for creating *Chewbacca's* suit and mask) and **The Empire Strikes Back** (1980) (creating a workable and realistic Yoda puppet for Frank Oz). He is Britain's most respected make-up artist and his many credits include **Dr Strangelove**, **The Omen**, **Top Secret**, **Oliver Twist**, **Superman II** and **Santa Claus**.

Make-up assistant Colin Arthur also went on to an illustrious career in film make-up and special effects. Most notably creating key make-up effects for the Harryhausen epics **Clash of the Titans** (1981) **Sinbad and the Eye of the Tiger** (1977) and **Conan** (1982).

Editor Ray Lovejoy went on to become one of England's most talented film editors, working on other fantasy films such as **Batman** (1989), **Krull** (1983), **Lost in Space** (1998) and Kubrick's **The Shining**. In 1986 he was nominated for an *Academy Award* (TM) for his work on **Aliens** (1986).

Second unit cameraman John Alcott eventually went on to be the director of photography on Kubrick's **Clockwork Orange**, **Barry Lyndon** and **the Shining**. His last film was **No Way Out** in 1986. Alcott passed away in 1987 from a heart attack in Cannes, France.

Musician György Ligeti's music appeared in two other Stanley Kubrick films—**The Shining** and **Eyes Wide Shut** (1999). Since 1959, He has been living and working in Vienna, becoming an Austrian Citizen in 1967. From 1969-70 he was a fellow of the *German Academic Exchange* organization in Berlin and in 1972 became *Composer in Residence* at Stanford University. Since 1973 he has been a professor of Composition at the *Hamburg Music Academy*.

Although 2001 did not eventually contain any of his music, Alex North supplied many other films with his talents. Among his credits are **Spartacus** (1960), **Willard** (1971), **Rich Man, Poor Man** (1976), John Huston's **Wiseblood** (1979), **Dragonslayer** (1981) and **Good Morning Vietnam** (1987). He passed away in September, 1991.

Novelist Arthur C. Clarke would become of the world's most well known and widely read authors of science fiction. Clarke served in the RAF from 1941 to 1946. He first sold his science fiction writing to *Astounding* magazine, a mainstay for young science fiction writers looking for exposure. One of his very first non-fiction books was *Interplanetary*

flight: An introduction to Astronautics published in 1950. His fiction novels include *Rendezvous with Rama* (1973), *Childhood's End* (1953), *Earthlight* (1955) and *Imperial Earth* (1975). He lives in Sri Lanka, which has been his home for over thirty years.

Stanley Kubrick went on to direct some of his best (and critically controversial) work following 2001. He directed the Pavlovian socio-black comedy **Clockwork Orange** (1971) based on the Anthony Burgess novel, (a film also mired in controversy to this day); the Victorian Epic **Barry Lyndon** based on the Thackeray novel *The Luck of Barry Lyndon* and the Stephen King horror epic **The Shining** (1980). After nearly seven years Kubrick returned with one of the most powerful depictions of the Viet Nam war put on film, **Full Metal Jacket** (1987). Kubrick's work has frequently been hailed and acknowledged for its excellence and technical sophistication. He was nominated for an *Oscar* for best director four times (for **Dr. Strangelove**, **2001**, **Barry Lyndon**, and **A Clockwork Orange**) and for best screenwriting five times (for **Dr. Strangelove**, **2001**, **A Clockwork Orange**, **Barry Lyndon** and **Full Metal Jacket**). In 1976 the *BAFTA* (*British Academy of Film and Theatre Arts*) awarded him best director for his work on **Barry Lyndon**. Last year saw Kubrick's final effort as a filmmaker, **Eyes Wide Shut**, based on Arthur Schnitzler's novel *Traumnovelle*. The film (like **2001**) concerned an odyssey, but one of a sexual and psychological nature. It was none the less visually stunning and strangely ambiguous, as **2001** first appeared to mainstream viewers in 1968. Just days after officially completing work on the film, Kubrick died of natural causes at his home, Childwick Bury in Hertfordshire, England, on March 7, 1999.

This December, thirty two years after its initial release, *Turner Entertainment* and *Warner Bros* will re-release **2001: A Space Odyssey** in the United States, restored with a new digital sound track and improved picture quality. It will be released on New Year's eve, 2000, in accordance with the wishes of Stanley Kubrick. "This is something Stanley himself was very, very desirous of," said *Turner Entertainment Co.* president Roger Mayer, who is working on the re-release project. According to a recent press release, print elements of the 1968 film have been kept in pristine condition, and new protection elements were pulled from Kubrick's negative in 1982. "At Stanley's instigation, the color timing was freshened up a few years ago, with new 35mm and 70mm prints made," said Dick

May, VP film preservation at *Warners*, which holds 'Odyssey' through its acquisition of Ted Turner's *MGM/UA* library. Hopefully this re-release will introduce this wonderfully unique and technically superior film to a whole new generation of filmgoers to ponder.

To say that the film has had a major impact on the modern film industry is an understatement. To merely state that the film is a cultural phenomenon is doing it a disservice. The feature has literally etched itself into the minds and memories of almost everyone who has seen it. Rock star David Bowie based his classic album *Space Oddity* on the film and has stated many times that **2001** had an impact not just on his music but his entire performance and persona. **Monty Python** animator, Terry Gilliam, frequently spoofed **2001** in many of his animations on the popular British comedy. The American animation favorite **The Simpsons** also frequently had references to Kubrick within the show. One of the most memorable had *Homer Simpson* inside a weightless space shuttle, spinning gracefully-like the *Orion Clipper*-munching floating potato chips to the tune of the *Blue Danube*.

This year elder statesman comedian (and **Forbidden Planet** Star) Leslie Nielsen will star in the science fiction spoof **2001: A Space Oddity**. It would also be fair assessment to say that a lot of today's modern digital film technology originates with **2001**'s groundbreaking visual feats. It literally broke the barrier of what was possible and impossible with its stunning effects techniques. Without the technical breakthroughs provided by Kubrick's film, **Star Wars**, **Close**

Encounters, **Alien** and **The Matrix** would certainly never have existed.

For many who remember this brilliant film, it is as relevant and baffling as the day they first experienced it. The film's many themes and arresting, thought provoking visuals still seem as perplexing and mystifying as ever. It leaves the viewer in a ponderous state, seeking the answers. Kubrick refused a pat answer. If he spelled it all out, it would have no meaning. "I'd rather not discuss the film," was usually his response to inquisitive reporters and interviewers seeking clarification on the themes of **2001**.

Kubrick rarely gave interviews, shunned the Hollywood spotlight and preferred to let his films speak for themselves. The questions and themes invoked by **2001**, like the mysteries of life itself, are complex and often confusing and we are forever left to contemplate and interpret their meaning. To Kubrick, **2001: A Space Odyssey** was all about the journey, not the destination.

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Special Thanks: The author wishes to thank the following for their insights and participation with the creation of this article:

Richard Yurlicich, Con Pederson, Bruce Logan, Jim Dickson, Bob Skotak, Frederick Ordway III, Rhonda Gunner, Tibor Szakaly, Brian Anthony, Mike Reccia, Lee Shargel, Hollywood Book and Poster, Hollywood Collector's World and MGM archives.

Stanley Kubrick Filmography

Eyes Wide Shut	(1999).
Full Metal Jacket	(1987).
Shining, The	(1980).
Barry Lyndon	(1975).
Clockwork Orange, A	(1971).
2001: A Space Odyssey	(1968).
Dr. Strangelove or: How I Learned to Stop Worrying and Love the Bomb	(1964).
Lolita	(1962).
Spartacus	(1960).
Paths of Glory	(1957).
Killing, The	(1956).
Killer's Kiss	(1955).
Fear and Desire	(1953).
Seafarers, The	(1952).
Flying Padre	(1951).
Day of the Fight	(1951).

Shots compiled by Paul Taglianetti;
selected shots courtesy Phil Rae.

Daisy, Daisy...

Tom Seiler's award winning 2001 diorama

story lee 'the Garage Kit Professor' shargel • photos tom seiler

When I first heard about Tom Seiler's award winning diorama my curiosity was peaked. I'm always interested in the subjects people choose from which to create museum quality showpieces. When I saw Tom's 2001 depiction of Dave Bowman powering down HAL I was not disappointed. This is a superb example of what a modeler can do if he/she puts their mind (and skill) to a project. Tom named his work, appropriately, *Daisy, Daisy..*, from the scene in the film in which Bowman has made his way into the bowels of the *Discovery* 'brain room' in order to disable the errant computer, HAL.

Tom had the idea for the diorama in 1996 but it wasn't until this year that he actually built it. As he explained it to me, "I completed working on the diorama from June 10, 2000 working on the project. I finished it with only two hours to spare the morning of the World's Best 2001 Figure Kit Competition."

As the photos show, the diorama is a recreation of the scene of Bowman in a space suit floating in the brain room as he disables HAL's higher brain functions. You'll notice the illuminated tongue of the memory model from the wall in Bowman's hand. The brain is a wall glow, with back lighting, as is the extended memory model. HAL's eye also is illuminated with that familiar and

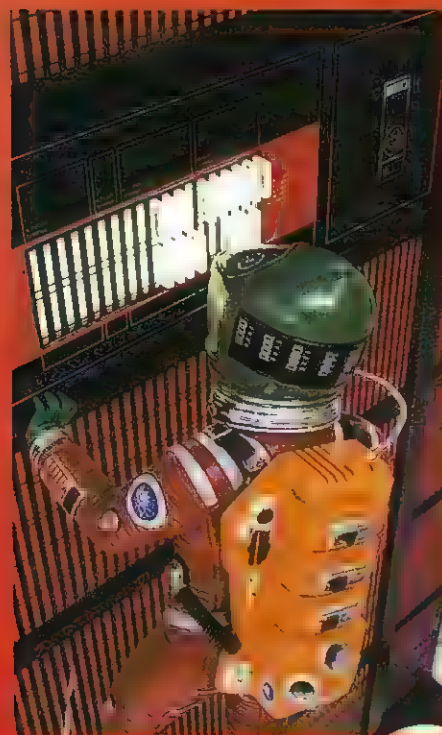
sinister red glow.

At the contest of custom built dioramas, Tom played a role in the first 15 minutes of dialogue from the film between Dave and HAL, including HAL's rendition of 'Daisy, Daisy'. Tom said the security room personnel cheered at the close of the show as they had to listen to that same three and a half minutes throughout the event (I think it would have driven me nuts, too!). Entered in the diorama category of the contest, Tom won the *Gold Award* plus *Best of Show*, *Best of Show* from *Geometric Designs* and *Most Amazing Figure Model* from *Amazing Figure Modeler* magazine. The detail is outstanding. Tom has chosen a subject and moment in time from the film that, for many modelers, would be an impossible task. Painstaking work went into every aspect of the diorama, from the hairstyle of Bowman to the position of his arms and legs that shadow the film scene exactly.

The core of the diorama is a *Lunar Models 1/8 scale 2001 Astronaut* with more than a few modifications. Tom hollowed out the resin helmet and, with some molding work, created the clear plastic face shield. The head was a spare resin casting of the *Mike Nelson* head from the *Janus Mystery Science Theater 3000* model kit. Tom chose it because of an uncanny resemblance to Keir Dullea. The arms were slightly reposed, cut into pieces, hollowed out and glued over threaded rods. Other parts of the torso were also reworked as was the backpack to simulate Bowman floating weightless in the *Brain Room*. Tom, who is a member of *The Houston Figure Modelers Club*, acknowledges them for their assistance and support of this project

and, most of all, his 'long-suffering' wife, Kristin. (God-Bless modeler's wives everywhere) for her patience as her husband was AWOL in the shop working on this award-winning masterpiece.

Note: To learn more about Tom's 2001 diorama and exactly how it was constructed, log onto: www.scifiman.com and follow the links.



Orion Odyssey

The making of P.H. Solutions' 24" 2001 clipper
steve haworth

Film and TV modelmaker Steve Haworth recently created the masters for possibly the largest and certainly one of the most impressive kit representations of the Orion clipper from 2001 ever to be released. Here Steve chronicles the construction of his patterns, with the article being followed by a review of the actual kit by Simon Roykirk.

... Before bringing you up to date with my work in a new article (covering what I've been up to since issues 16,17 and 18) I've been asked by SFFX to write a short piece on the pattern construction for PH Solution's 24" 2001 Orion.

Phil Howard, Director of P. H. Solutions in Manchester (formerly Vision UK), instructed me to create the Orion shuttle as the first in a series of resin kits to be released from the film 2001, so it was under Phil's watchful eye that I set about making

the master that would be moulded to produce the finished kit.

The shuttle itself is a fairly straightforward shape, so the actual making of the model wasn't a great concern (in fact the only concern was that there was a limited time in which to construct the Orion master—anything more than two weeks wouldn't be commercially viable). It was in researching reference material that problems arose, such as small anomalies in panel lines and conflicting information that couldn't be cleared up by referring to the film, primarily with regard to the underside of the craft. Trying to calculate true elevations from the movies' best shot of the Orion, a 3/4 rear, is virtually impossible, even for those with experience in building models from photographs. This applies especially to the underside, which is seen only from a distance whilst the craft is executing a roll.

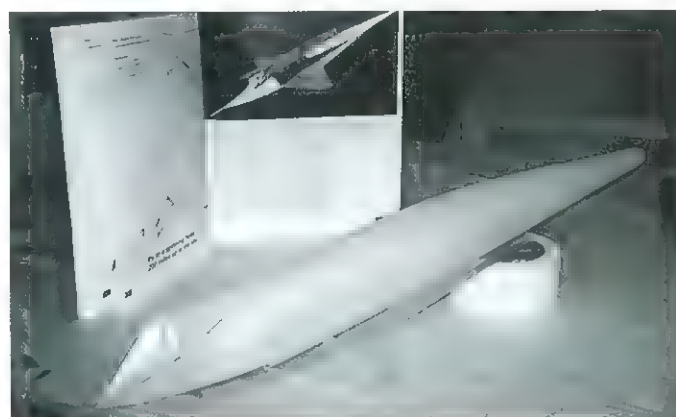
According to the book *The Making of 2001* (Agel, 1970) extra Orion footage was shot, but was axed from the final film. This may have provided useful alternative views of the clipper.

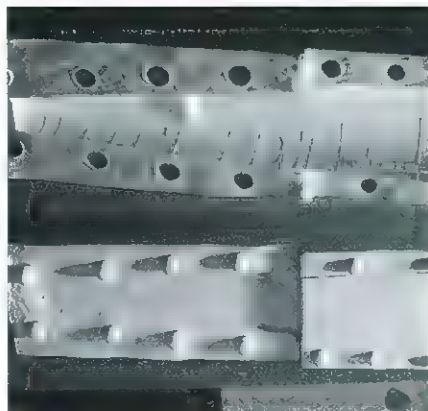
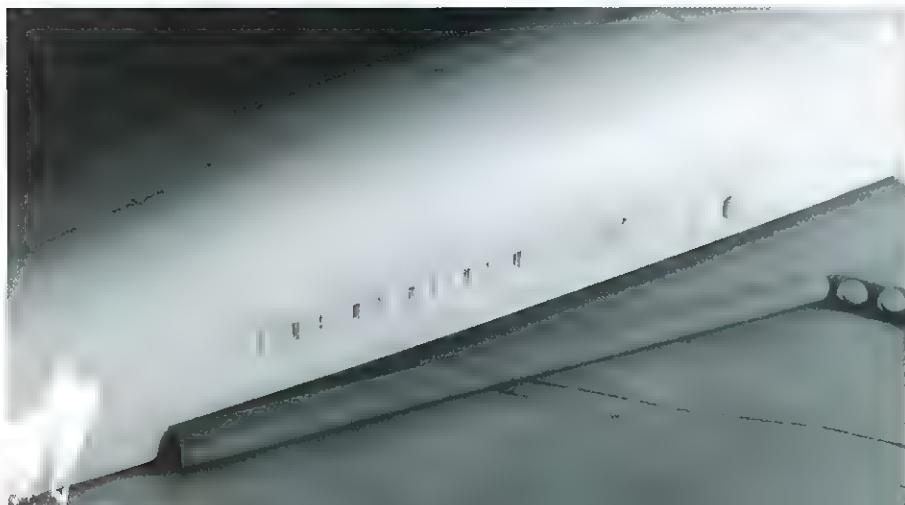
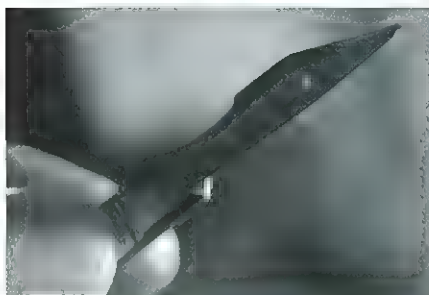
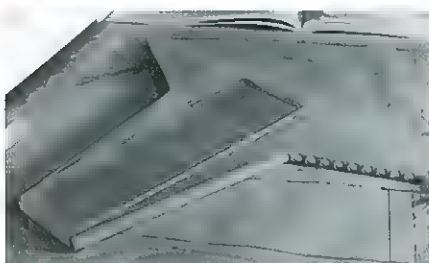
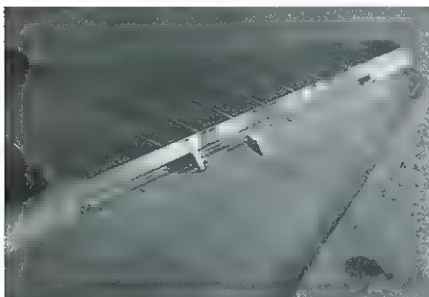
Even had the actual blueprints (wherever they may be) been available, they might have proved confusing. It's quite possible the model crew deviated, albeit slightly, from the original plans. To stick to a drawing to the letter means every

single wigget and panel line would have to be measured at least twice (measure twice—cut once, you know the rule) which takes more time than ad-libbing. Often it's the general shape and proportions that matter, and the overall 'feel' of the detail. As long as everything is square and crisp I can't see a director worrying about a millimetre deviation, not even Mr Kubrick!

The only real (but not realistic) solution would have been to get hold of the actual model used in the film. The three foot version, as opposed to any other, smaller models made, would show all the detail (surely 2001's production created smaller Orions for long shots, considering that a low budget film like *Space Truckers* had four different size *Pachyderms*!—Talk about chalk and cheese).

Tracking down such items would have proved difficult, to say the least, if not impossible, as they probably no longer exist. Discovering their fate would have been equally hard. Common endings for movie models are *storage* (to be forgotten or re-used in a sequel); *skipping*—which usually involves the intentional destruction of the model before throwing it in a skip [dumpster] (so memorabilia hunters can't get hold of it); and *being taken home* by crew or production staff—usually the ones who have put up the money for the film—to sit on a shelf in an office, or for the kids to





play with leading to subsequent destruction (heresay has it it was this latter ending for some of the models from 2001!). Anyone know the whereabouts of any 2001 models...?

Back to the problem at hand... The aerodynamics of the *Orion* imply *HOTOL* technology (for anyone not familiar with the term; *H*ORIZONTAL *T*ake Off & Landing), so the craft would need an undercarriage, like *NASA*'s shuttle, yet there was no evidence of flaps on any of the references tracked down. I ultimately decided to include these in the panel line detail. There wouldn't be much room for the *SCRAMJET* technology in the wings, but this is also implied by the series of holes at the front and back of each wing.

As far as I can tell, the panel colour variations on the movie's *Orion* were accomplished with paint only and

don't follow pre-scored lines so, to be true to the movie, they shouldn't be included, but who wants to spend hours analysing a single photograph to get panel positions right? (Well, *I do*, actually—so you don't have to).

The desire for nice, crisp panel lines determined that the patterns be made in either perspex or styrene. Feeling that subtle scalpel lines might disappear under paint or after sanding, scribe lines, created with a specially ground scalpel tip, would have to be cut into either of the above materials. Styrene is easier to scribe than perspex (which would have needed multiple passes to achieve the same effect and therefore take longer) so styrene was decided upon, which meant vac-forming.

The plugs for the vac-form were machined and carved out of *Ureol* or 'plastic wood', a kind of fibrous resin only available from industrial outlets in large amounts (a 1.5m x 400mm x 50mm piece costs around £200!). *Ureol* itself can be scribed, but tends to chip along the edge.

A simple skeleton drawing was made for the side elevation and the plan, just to get the project underway, with me having decided that all other information could be drawn directly onto the model.

Once the vac-formed pieces had been trimmed of excess flange and stuck together, the surface was rubbed down with a fine grade wet and dry (around 600). This created a paper-like surface—ideal for drawing on—especially panel lines—where their position could be checked before actually cutting into the surface. It would have been nice to have had complete working drawings to refer to, but there simply wasn't the time.

As the wings were basically flat, it was possible to fabricate them from solid perspex and still scribe all those lines into them. To scribe against, a number of different types of narrow steel rulers and a set of photo etched, stainless steel templates—similar to French curves—were used.

With my large hands I found it possible to hold the rule firmly, either around the fuselage or across the wings, without it budging, while several passes with the blade were made.

With the luxury of time, taping the rule down for each line would have been the desired technique, except when scribing over a compound curve, where the metal edge of the guide is being bent under some considerable tension. In these circumstances hand grip is stronger than tape every time. The secret with scribing is to make the first pass very gently (then if you do veer off, you won't cause too much damage) and to build up the pressure with each successive pass. If something a little subtler is required, only one light pass and one heavier pass (the light one gives you a track for the heavy one and makes veering off less likely anyway) would be required. When scribing you need to remember how many passes you make for each line you scribe so you get an even depth overall.

An allowance was made for a tapered piece of *Ureol* along the front of each wing. This would be easier to sand the radius onto. After Phil had cut out the ellipses on his *PACER*—a computer controlled milling machine—I stuck these on with thin superglue.

Positions for the window, cockpit, engine and nose areas were drawn onto the surface of the model then cut out with a scalpel as, following the vac forming process, the 2mm thick styrene had stretched to around 1.5mm thick and was just about thin enough to be handled in this way. I then backed up these recesses with a larger, flat piece of styrene and carefully cemented them in place with Methylene Chloride, chloroform or one of the true plastic solvents.

The engine area was a little trickier. I Decided not to marry up another small vac form piece to the openings.

Instead, a box was built inside the model, then two *Ureol* patterns were pushed into polyester filler, either side of the central fin. A thin coating of *Vaseline* aided the release of the patterns once the filler had cured.

A band of *EMA* V-groove styrene was clad amidships, a few tiny pieces of micro-strip (styrene) carefully Methylated in place for the surface detailing, window frames, etc, and, *hey presto...* she was ready for the mould—well *almost*. Before moulding, the model was sprayed with grey plastic primer (from *Halfords*). This highlighted any small imperfections and gave the kit an even overall surface texture.

Simple perspex mould boxes were constructed in which components were held in place using double sided tape. Approximately 8kg of RTV silicon rubber were used in the moulding process—all of it carefully weighed and mixed to the manufacturer's instructions (at £18.00/£20.00 a kilo it makes sense to mix it properly).

After mixing, it was degassed in the vacuum chamber until all the air bubbles had been removed. No matter how carefully you mix it, you always end up trapping air and, if not removed, these bubbles can ruin your mould by appearing right next to, or *on*, the most important pieces of detail. Another way in which they damage your casting is by sitting just under the surface (closest to the model). The heat caused by the chemical reaction of the resin expands the air in these bubbles and you end up with a casting that looks like it has a bad case of cellulite.

For strength reasons the only component not produced in resin

was the very slim tail antenna, which was made in white metal using the centrifugal casting machine.

The last items produced were the artwork for the rubdown graphics and the box artwork, both of which were generated on the computer then handed over to a reprographic house for production.

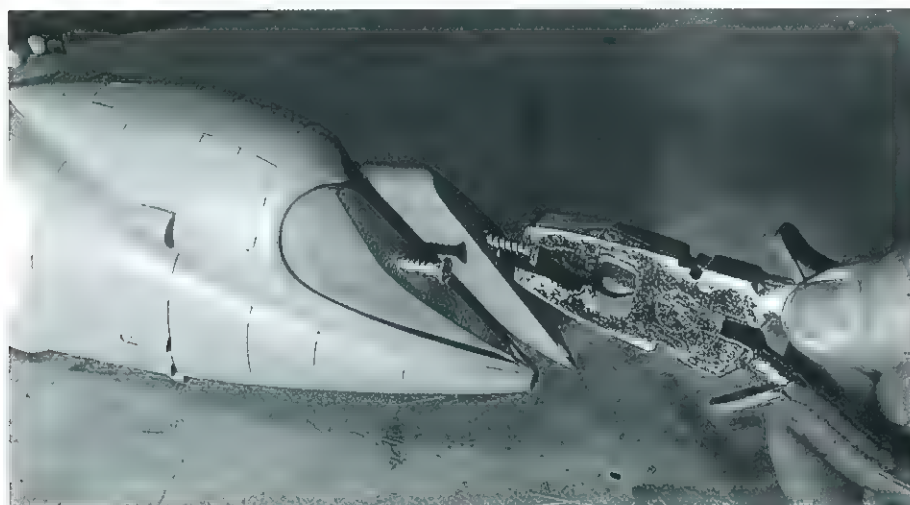
I mentioned at the beginning of this article that the *Orion* is the first in a line of kits from 2001 and, at the time of writing, our second kit, the *Aries* lander (360mm in diameter and standing over 400mm tall) is almost due for release (see pictures), to be followed by the *Space Station* at 600mm diameter, which is well underway.

References: 2001—filming the future by Piers Bizony. *The Making of Kubrick's 2001*, edited by Jerome Agel. 2001 *Orion Shuttle Airfix* kit and drawings.

Web: www.starshipmodeler.com
www.underview.com

Finally, if anyone has any behind-the-scenes photographs or bone fide reference material from 2001 they would like to share, please forward it to the publishers of this magazine.

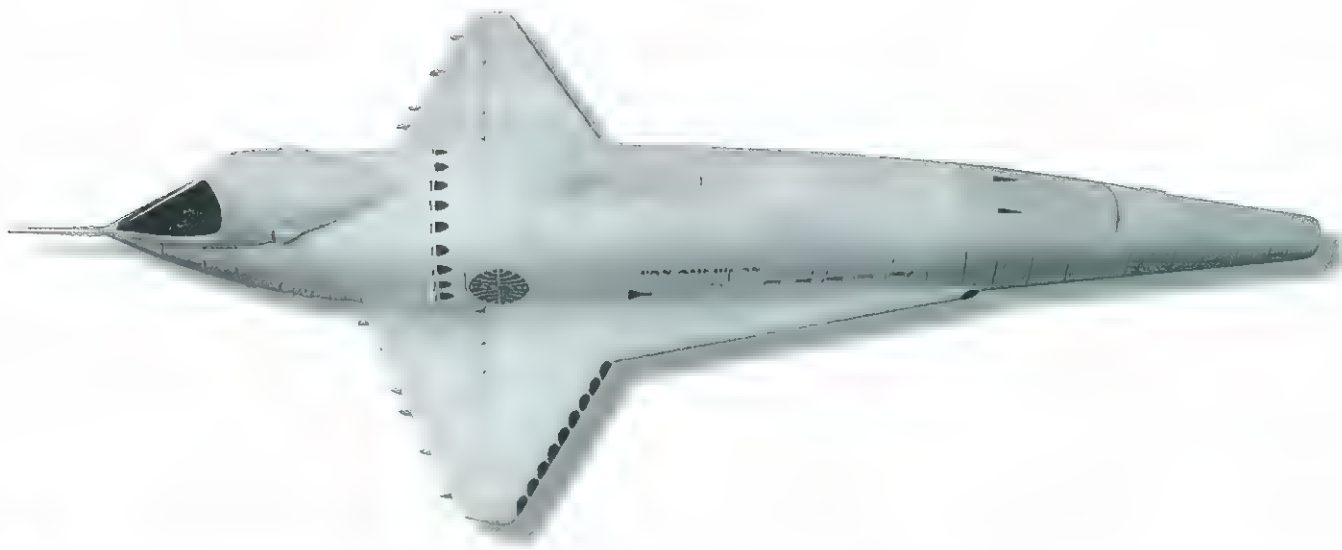
An upcoming article by Steve will include the making of a 'futuristic' flying car, more hand props for Modern Props in L.A.; a city of light; power ranger figure; solar satellite and never-seen-before shots from Red Dwarf VIII.



At last—an Orion with presence

reviewing P.H. Solutions' large-scale 2001 clipper

simon roykirk



I'm showing my age by sharing with you the fact that I had both the Airfix and Aurora kit versions of the Orion clipper from 2001: a Space Odyssey around the time the movie was released. Of the two I preferred the Aurora kit, which I considered to be a far sleeker, more delicate looking representation. Both Orions, however, were far too small to make any great impression, and both, having been viewed since with more experienced eyes, now seem wildly inaccurate.

Enter, some thirty two years after the film's premiere, and just in time to greet the year of the movie's title, an entirely different kind of *Orion* kit, courtesy of garage newcomers P. H. Solutions. Different, because this *Orion* is a resin rather than an injection plastic subject. Entirely different because this *Orion* makes its spectacular entry into the 2001 kit arena at a satisfying *twenty four* inches in length. So—in this new kit have we at long last been presented with a representation of this classic

craft that does the original justice? Read on and we'll find out...

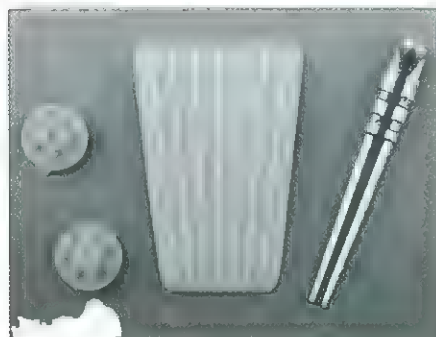
Construction

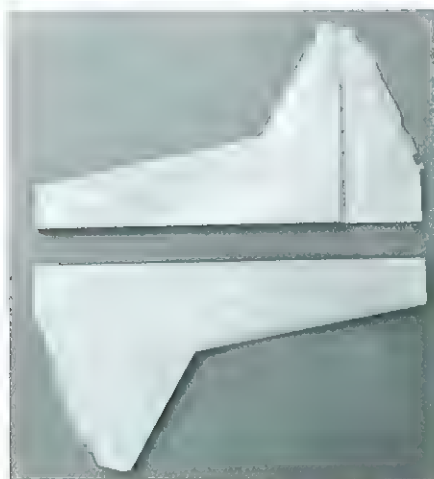
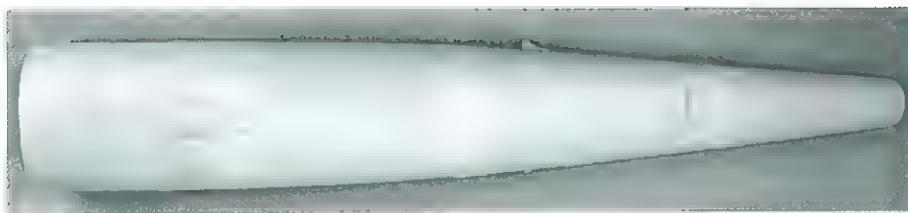
The new *Orion* assembles from just eight pieces—a main body, rear body, wing halves, ribbed underside panel and engine 'exhausts' in resin plus a white metal rear antenna assembly. Excellent rub down *Pan-Am* decals and a set of instructions complete the line-up. The castings on our review kit were superb—crisp, virtually flash free and covered in subtle detail. The antenna is a beautiful white metal construct that is so well made it almost appears to be polished.

Assembly is something even the neophyte garage kit modeller would find simple. Preparation was simply a matter of removing a slight moulding 'step' on the underside of the main body and rear section with needle files, scalpel and sandpaper and 'cleaning up' around the rear wing

fairings with a sharp scalpel (be careful here—the fairings are *very* delicate). The body sections were then epoxied together, making sure that the contours lined up around the *top* of the craft. The wing halves were similarly epoxied together and fitted to the body. This resulted in slight gaps to the rear of the clipper where the wings meet the body and also along the underside wing-to-body and wing-half-to-wing-half lines. These were filled with *P38* and filed and sanded smooth to match the surrounding contours. A handful of panel lines subsequently needed to be rescribed following this operation.

The engine exhausts were added next (the instructions suggest you glue them in place then *after* final painting, but they have a tendency to flip over as you position them in their narrow recesses. If they were to do this when laden with glue on one side they would make a considerable mess of your nice new paint job—I therefore recommend you add them at assembly stage then dry brush them when painting the whole craft to bring out their detailing). Similarly the white metal antenna was epoxied to the rear at this stage. Wisely in the instructions it is also recommended that you leave this piece off until everything else is painted. Again, and for reasons of not wanting to damage a pristine paint job, I added the





antenna during general assembly—and wished I hadn't. This delicate 'outrigger' piece catches and snags on everything as you handle the clipper—add it after painting the body as they tell you to.

Painting

And that's it... construction started and finished in around a day taken at a leisurely pace. The real skill in bringing out the detailing on a subject as worthy as this one lies in the painting. What few stills exist of the three foot studio miniature used in the movie show the *Orion* to be a riot of contrasting panels, not the simple monotone white suggested in the old injection plastic kits. Don't get me wrong—the overall effect of the

model has to be one of a *white* ship, but that overall whiteness needs to be composed of subtle contrasts in shade and reflectivity to give the model scale and contour.

I first treated the *Orion* to several coats of a good quality white car primer. This gave the craft a satin sheen which I decided to keep as my principal colour. Having left the primer to harden for a couple of days I reached for the graphite powder (you'll find this in DIY stores as well as larger art shops) and smothered my pristine *Orion* in the fine powder. At this stage it looked horrible, but the point of adding graphite is to bring out each tiny detail on the surface and give the craft an overall weathered look. With the *Orion* looking extremely grubby I took some wire wool and carefully rubbed back the surface, leaving the graphite in and around all the minute detailing but taking the principal colour back to an off white.*

I now selected various panels and carefully masked around them. These areas were then sprayed from a distance and at an angle parallel to the craft with grey car primer until a very slight coating had built up. I then 'sealed' this coating in by spraying over the grey lightly with gloss white

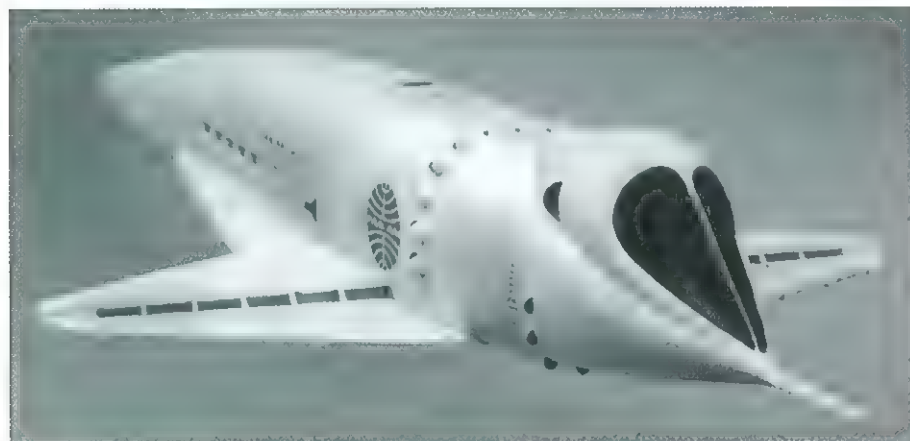


car paint. This toned down the grey and, when the masking was removed, provided contrast panels that were not only a slightly different colour, but were also glossy as opposed to the satin/matt off-white finish of most of the ship. They catch the light differently and suggest that certain panels have indeed been added to the whole or replaced after principal construction of the space plane has taken place.

I next remasked the *Orion*, selected further panels and sprayed these with a different white car paint. I repeated the process with slightly different whites and grey/white mixes until I was happy with the overall detailing then brush painted the engine recesses, wing intakes and outlets and retro outlets in matt black (Note: the original IP kits both suggest you paint a matt black anti-glare panel in front of the cockpit windows. I can find no evidence of this on stills of the studio miniature.).

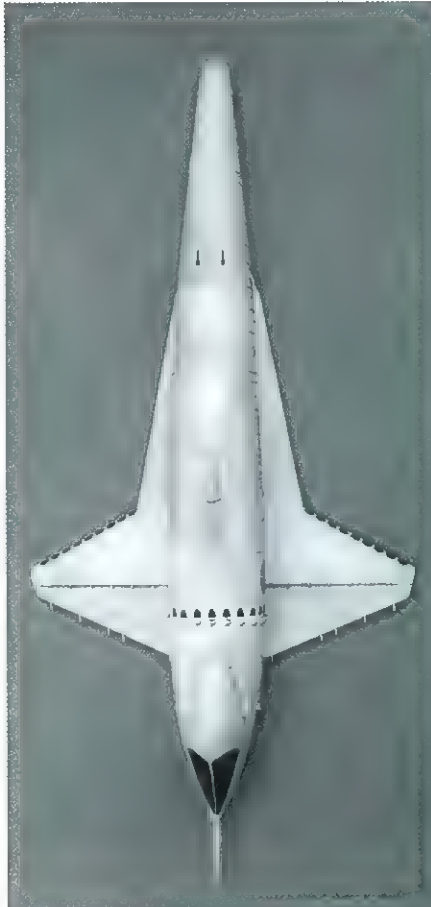
I could now add the 'windows'. A bright orange self-adhesive car pin striping tape was chosen for the cockpit. Small pieces of tape were pressed in place within the cockpit recesses then scalped to shape and the excess removed. For the side windows I chose a more neutral silver grey r/c car tape, again pressing pieces in place and scalpelling them to the correct contours.

The finishing touch was the addition of the dry transfers provided plus some tiny signage detailing from a spares box *Verlinden* dry transfer sheet and the twin black 'dart' markings seen on the roof of the studio miniature towards the front, these being cut from self-adhesive black vinyl sheet. Remember to position the dry-transfer decals very carefully and to cut around each one closely before offering it up to the model. If you make a mistake you're stuck with the skewed results, so ensure that each decal is lined up correctly before rubbing it down. A final burnish of the decals to seal them in place and the *Orion* was finished.






Conclusions? This kit is quite simply *superb*. The scale, detailing and presentation are just right. The *Orion* goes together simply and quickly and would make a perfect 'transition piece' for the injection plastic modeller wishing to expand into the more demanding world of garage kits. To comment on accuracy is difficult as so few shots of the studio *Orion* exist. I think the intakes on the wings should be elliptical rather than circular, and that the rear engine fairing may be a tad too tall, but this is such a beautiful kit you *just don't care*. An *Orion* at this scale and with this level of detail is



breathtaking—full marks, *P. H. Solutions*. Roll on the release off your mega-scale 2001 *Aries* lander.

Review kit kindly supplied by *P. H. Solutions*. *P.H. Orion* available from *Comet Miniatures*. 



** This method of weathering was 'invented' by professional film/TV Steve Haworth, who also happened to make the masters for the kit. My only adaptation to his weathering method was to substitute graphite powder for his preferred spray-mounted-on black powder paint.*

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New large-scale 2001 kit—breaking news

In late October a new five and one half foot long **2001 Discovery One** kit should be available from *Comet Miniatures*. Manufactured under the *Advanced Concept Models* label, the new *Discovery* will feature around 120 parts, some of which will be pre-drilled and sanded, and a two-piece threaded rod spine connected in the centre of the model by a threaded aluminium block. The *command module* will have a diameter of eight and a half inches and *Discovery* will be priced between £300—£399.00. Check with *Comet* for release details.



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2001: A Model Odyssey

keith mcneill

When 2001: A Space Odyssey was released in 1968, merchandise was fairly limited and certainly not on a par with today's offerings for the major films. If 2001 was released today kit manufacturers would likely be falling over themselves to issue models of the many craft which feature in the film. In 1968 Aurora was the best placed kit company to issue 2001 models as it had a history of covering similar subjects. As it transpired they only produced two, with Airfix also producing one.

Many years later, in the late 1980's, *Lunar Models*, a US-based garage company producing resin kits, started to produce some subjects from the film. And, more recently, a couple of other companies have joined the fray. Perhaps one of the biggest problems for producers of **2001** kits is the relative lack of reference material. To prevent second rate film companies from diluting the effect of the film by re-using the studio models, Stanley Kubrick ordered that all models and props be destroyed upon completion of filming. Thus, none of the original models survived and model makers have to rely on the few publicity shots available and multiple viewings of the film. Basic construction of the models used in **2001** was of wood, fibreglass, plexiglass, steel, brass and aluminium. The fine detailing which was a hallmark of all the film's

models consisted of special heat forming, plastic-cladding, flexible metal foils of differing textures and thicknesses, wire and tubing. Thousands of parts selected from plastic model kits were used to detail the models and I understand this idea may have originated with Brian Johnson who had used similar techniques whilst working with Gerry Anderson on **Thunderbirds**.

The Spacecraft

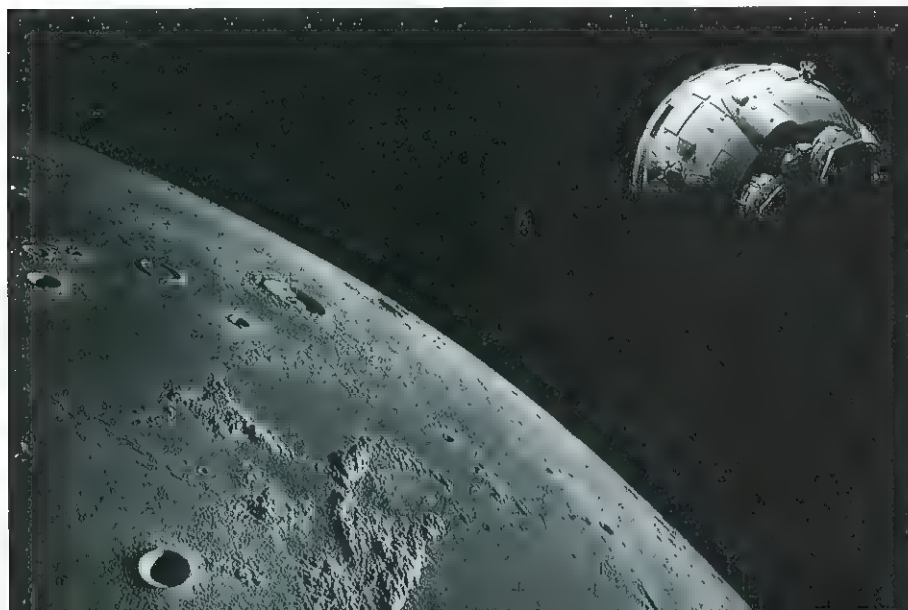
Six main spacecraft appeared in **2001**, the order of appearance being, *Orion III* shuttle, *Space Station 5*, *Aries 1B* lunar shuttle, the *Moonbus*, *Discovery One* Jupiter-bound spacecraft and the one man EVA pods. I find it quite amazing that these craft were designed around 1964 for the film yet, to this day, do not look dated and still appear futuristic and

totally functional. All of these—with the exception of the *Space Station*—have been issued as kits of one description or another and I will cover each kit in this article. In addition I will touch upon two other kits available – namely the *Lunar Models Discovery* and *Lunar astronauts*.

The *Orion* film model was about three feet long and was shot both as a three dimensional model and as an animated photograph. The *Aries 1B* model was three feet in diameter and equipped with deployable landing gear and tiny air nozzles in the engine bells to kick up dust upon landing. This landing scene was filmed at high speed to create the slow motion effect. Little information is available on the original *Moonbus* model. The main spacecraft of **2001** is, of course, *Discovery*. This was envisioned as being seven hundred feet in length. Two studio models were used. One had a length of fifty four feet with a spherical Command Module diameter of six feet, the other being a fifteen feet long model used for long shots. However, the seven hundred feet quoted for the 'real' thing is somewhat questionable, as various scenes (*Bowman* beside the AE antenna, the size of the side hatch into *Discovery* which *Bowman* is forced to use) all suggest differing scales.

The Kits

As mentioned previously, only three kits appeared at the time of the film. *Aurora* issued the *Orion* and the *Moonbus* with *Airfix* also issuing the *Orion*. The *Moonbus* went on to become a collectors' item. For many years I had always regretted the fact that when I spotted one in a local model shop as a fourteen year old I could not afford to buy both it and the *Airfix Saturn 1B*, so opted for the *Saturn*. The *Saturn 1B* was ubiquitous for many years, but I never saw the *Moonbus* again. About twelve years ago, however, and to my delight, I managed to finally obtain a *Moonbus*. Despite its age, the quality of this *Aurora* kit is pretty good



Only when Mike Evans of *Lunar Models* starting producing resin **2001** kits did other spacecraft from the film become available. First was a four inch (100mm) diameter *Aries 1B*, followed by a thirty inch (760mm) long *Discovery* and a small *EVA pod*. Years later, they produced a twenty four inch (460mm) long *Orion*, and nine inch (230mm) tall *Discovery* and *Lunar Astronauts* and a diorama of the *Lunar Astronaut*, *Monolith* and *Ape*. An unknown Japanese company produced a larger three point five inch (90mm) diameter *EVA pod* which was much more accurate than *Lunar Models'* offering. A few years ago *Planet X* produced an eighteen inch (460mm) long *Discovery* which, unlike their **2010** *Leonov* kit, was not very accurate, but more of this kit later. And most recently a company by the name of *Captain Cardboard* issued an extremely detailed seven inch (178mm) diameter *Aries*. Under the title 'Models Aurora Shoulda Made' it is available in an *Aurora*- style box. It was this kit which inspired me to undertake a four month project to refurbish and photograph my **2001** model collection and bring the other models up to the standard set by the *Captain Cardboard* model.

Lunar Models had intended producing a kit of the *Space Station* but, unfortunately, this has never materialised. This will therefore, have to be a scratchbuild project for the future.

Aries 1B

This *Captain Cardboard* 1/87 (HO) scale kit is beautifully detailed and, with one or two exceptions, is very accurate. I understand the previous version of the kit had options for a retracted or deployed landing gear but, to simplify things and provide sturdier gear, they were moulded only in the deployed position. As I intended photographing the model in both the Earth/Lunar cruise mode and also the landing mode, I undertook to try and make the gear deployable. First I separated the individual struts at the appropriate points and made small hinges with a tube and pin assembly (see video grabs). At this point I discovered that the landing gear must be slightly over scale as they would not fit through the hull opening. The apertures were widened, which meant that the landing gear fairings did not now cover the holes. A bit of artistic licence was required so I made temporary panels which were placed over the apertures followed by the temporary attachment of the gear fairings. Also, the rigidising struts which

are attached at one end between the engine blocks would not retract sufficiently. So, instead of a hinge, I made a small clip from a piece of plastic tubing with a slice cut out. This allowed the strut to be unclipped for storage.

The panels running around the foot of the hull skirt are moulded with no detail, so these were removed and new ones made with *Evergreen* grooved plastic card. Similarly, the spacings between the windows were covered with heavier grooved plastic card (but with the strips running vertically). These modifications are obvious on the accompanying photographs.

I opted to drill out the windows and place clear plastic behind them. Baffles were glued internally to stop you being able to see right through the model. For the crew windows I took two clear red *bussard collectors* from an old *Enterprise D* model, cut them to shape and placed them in the openings. I was lucky in that they fitted perfectly as there is a slight compound curve to the windows.

I had obtained *Tangents'* **2001** decal sheet and, although not present on the real model, opted to follow *Tangents'* suggestion about naming the craft, as was traditional with *Pan Am* aircraft. I placed a small *Pan Am* logo to the left of the hatch, *Pan Am* lettering above the hatch and the name *Von Braun* below the hatch. (I found, however, that these decals are so thin it is almost impossible to move them once placed without destroying them. I also discovered that they disintegrate when *Humbrol Matt Cote* is applied. I had to cover them with *Johnson's Klear* [*Future in the USA*] varnish first.) These are small and discrete but offer a little colour and individuality to the model. The *Aries* was sprayed with *Games Workshop Skull White* (as were all the kits) which has very good covering properties but also goes on very finely, allowing detail to show through. The model was then dirtied down as per my research material.

Orion III

The *Airfix Orion* is some twelve inches (305mm) long and is not really very accurate. Not having seen the *Aurora* version, I cannot really comment. However, it is *Lunar Models'* giant 24 inch (610mm) *Orion* (1/144 scale) I shall concentrate on here. Overall the fuselage is far closer to the correct shape than the other kits. Unfortunately, it is solid resin and therefore gives no opportunity for opening up the windows. The window section is, in fact, slightly too shallow but would take major

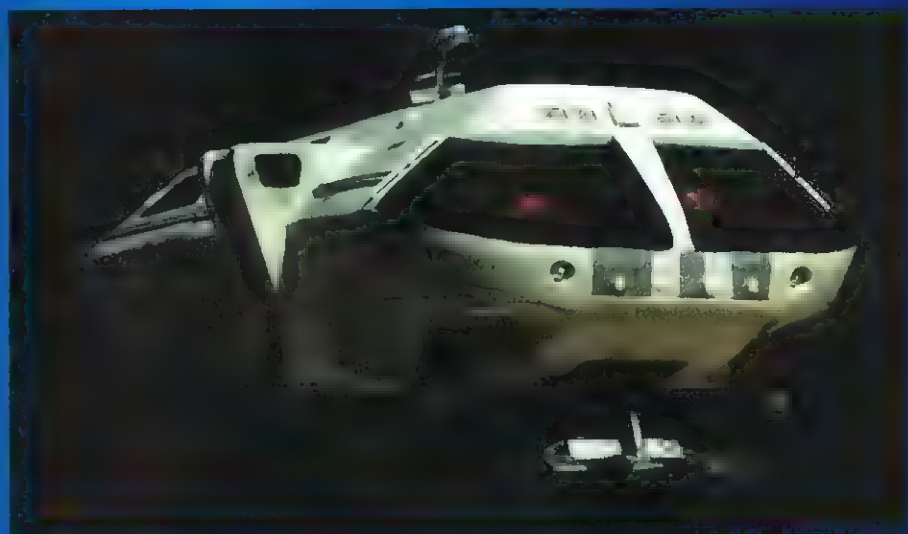




modification to remedy, so I left well alone! The air-raised section (where the Pan Am logo would go) was removed. Some photos show a raised rib towards the front of the craft but others do not so, as this would not be too streamlined, I opted to remove it. The side hatch was also sanded down and panel lines scribed in its place.

On my kit the rear portions of both wings were damaged so I replaced them with plastic card, which had panel lines scribed before fitting. Loosely following the excellent photo of the studio model which appears in Piers Bizony's book *2001: Filming the Future*, I scribed panel lines all over the model. I used Dymo tape as a guide to follow the curvature of the fuselage. The model was sprayed with the aforementioned Skull White and subtle shading dry brushed over selected panels. Too subtle for the camera to pick up in the photos, unfortunately!

The decals which come with the kit are excellent. I added a *Tangent Clipper* Shepard decal to the nose.



One Man EVA Pod

Lunar Model issued a small pod but the shape was not correct and the window too small. In the mid '80s an unknown Japanese company (unfortunately there was no company name on the box) issued a far more accurate 3.5 inch (90mm) diameter version (probably 1/144 scale). It was

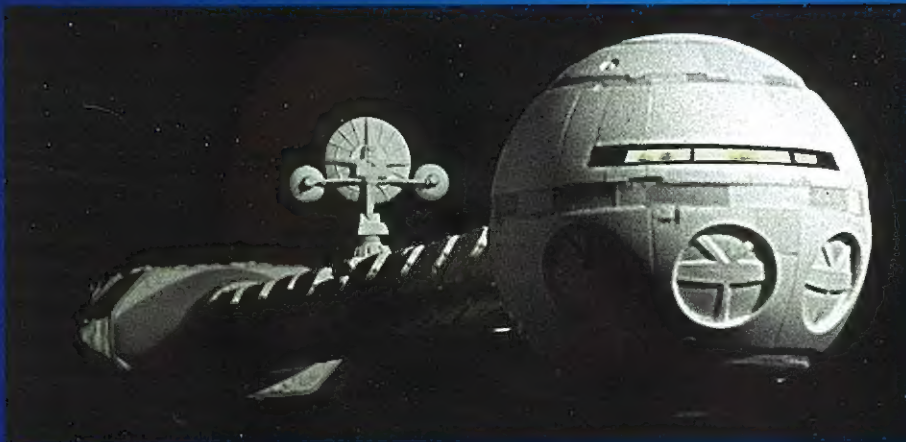
I understand *Captain Cardboard* are casting a large 6.5 inch (165mm) diameter hollow resin version of the pod (1/12 scale) but their web site has not been updated as of this writing and I have no further details. The few photos on the site show that it will be an excellent model.

The Moonbus

The only kit of this subject was produced by *Aurora* in 1969. At 1/48 scale it measures nine point five inches (240mm) long. When I purchased it from a private collector it was half built and poorly painted with lots of glue everywhere. I dismantled it, removed all the paint with *Model Strip* paint remover and started again. The previous owner had made a good job with the astronaut figures so I did not need to redo these.

The kit was built as per the instructions with only a few alterations. Contrary to what *Aurora* and others have suggested, the pilots' windows do not wrap around the nose—i.e. they are non conformal and, like the *Eagles* from *Space: 1999*, are inset. As this craft operates in a vacuum there would be no need for these large, streamlined windows. On top of





viewing the film carefully did I realise that these windows did not exist! Making and fitting inset windows proved a bit tricky to accomplish as they also curve slightly at the outside edge. After several attempts I arrived at something I was happy with. These forward windows were tinted with clear red paint and the passenger ones with light clear blue.

The humps either side of the cabin are thruster quads and, although there are openings for most of the thrusters, *Aurora* omitted the forward facing ones. Apertures of the correct size, according to what I could perceive from video grabs from the film, were cut using my trusty motor tool.

Again, *Tangent* decals are available but were not used. They actually supply tiny *Clavius Base* patches for the figures but these were not needed as the previous owner had made a pretty good job of painting them on. The *USAA* decals (even the *Tangent* ones) were too large, so again I resorted to scanning them and printing them out onto decal film with the laser printer.

Discovery

There are currently two *Discovery* kits available—the *Lunar Models* version and the *Planet X* kit. Without a doubt the *Lunar Models* one is the more accurate of the two.

Discovery was one of the first resin models I made about twelve years ago. It is cast in a hard, dark brown resin which was quite difficult to cover, even with the *Skull White*. The rear engine section and the spherical Command Module were very well moulded, but the sixty-odd small modules running the length of the spine certainly were not. They were more of a parallelogram shape than rectangular. When I first built this kit I modified these modules but was never entirely happy with the outcome. On embarking upon this project I decided to upgrade *Discovery* once and for all. By consulting photographs I did not have access to the first time around I determined that the spine was, in fact, too short. So it became a rebuild job!

I discovered that, although the *Planet X* *Discovery* was only eighteen inches (460mm) long, the modules were so out of scale they would be close enough in

depth to fit the *Lunar Models* version. However, they were too short. So, gritting my teeth at the thought of the cost, I purchased another *Planet X* *Discovery* and set about sawing, cutting and splicing some sixty modules! However, I think the end result was worth it. The spine itself was made from two lengths of brass tubing with plastic rod inserted to add strength. The spacers between the module groupings were railway barrels which, coincidentally, were of exactly the correct diameter to allow the brass rod spine to pass through.

The multi collar directly behind the Command Module of the kit was based upon the *Discovery* in **2010**. As mentioned before, no original models existed, so when **2010** was being filmed the model makers took guesses in some places. Of course, when **2010** was released there was more of a market for merchandise and lots of photos of the models being constructed as well as stills from the film were released. Thus *Lunar Models'* pattern maker probably based most of his plans on these readily available photos. Referring to **2001: Filming the Future**, which contained photos showing the area in question, I therefore reconstructed the collar area as closely as possible using a variety of cone shapes from my spares box. The AE antenna which featured prominently in the film was scratchbuilt using some fifty parts.

The Command Module has inset bands running around the diameter of the sphere at several 'latitudes'. As moulded, these are not of a very great depth and required that they be made so. I used my drill with an abrasive head to deepen the 'equatorial' and two others but the two 'polar' ones had me fooled. A friend came up with the answer. Get a hole cutter with the correct diameter which fits onto a DIY drill bit. Don't obviously use the drill! Hand hold it and gently turn it, thereby digging a groove.

The Command Module/collar area has many shaded panels and, taking a leaf from the original model makers, I decided to try their trick with various shades of painted Bare Metal Foil. Although not noticeable in some of the photos I was not as successful as I had hoped to be.

The total length of *Discovery* eventually came out at 810mm.

Discovery and Lunar Astronauts

The two astronaut figures available from *Lunar Models* at 1/8 scale are of exceptional quality. The *Discovery*



astronaut comes on its own and the *Lunar astronaut* is available with a base and *Monolith* (actually, just some *plasticard*) or with an *Ape* as well.

I made the *Discovery* figure some eight years ago and it was only recently that I mustered up resolve to build the second one. You see, I decided to hollow out the helmet and insert a clear visor. This equates to converting a solid piece of resin some three cubic centimetres thick into dust!! Whatever you do, don't attempt this in the house! I managed to obtain a couple of plastic 1/8 scale head and shoulder figures from a radio controlled aircraft shop. The shoulders were removed and the head was glued into the neck of the upper torso, making

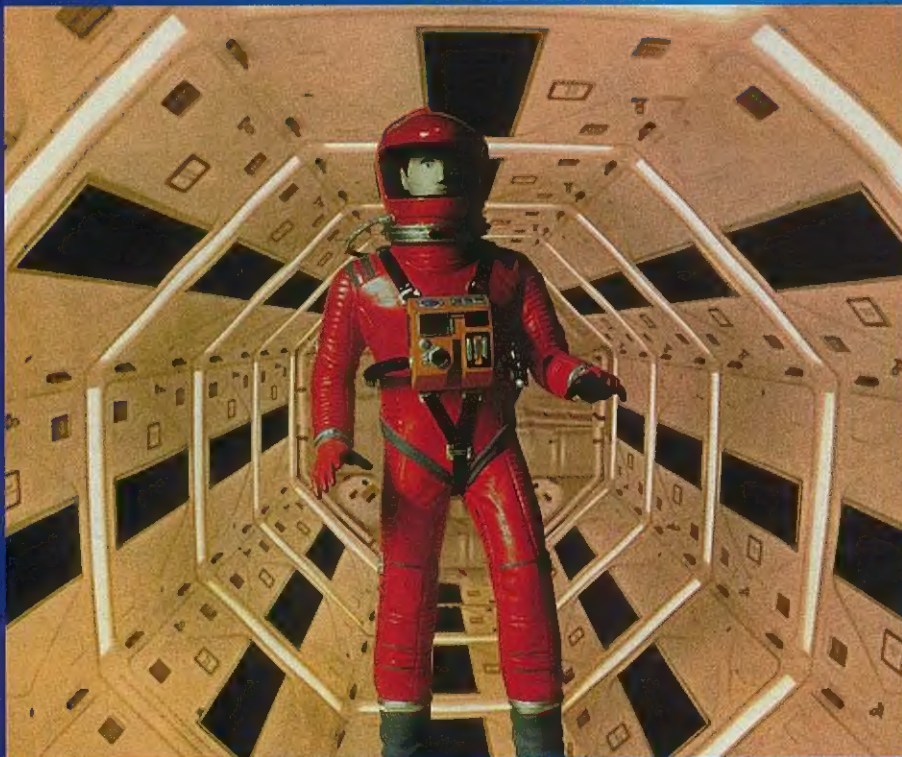
photographs of this figure for multiple poses in one photo I decided to scratchbuild the camera that one of the astronauts in the film used. This was placed loosely in one of the figure's hands.

Both astronauts sport *USAA* patches (different wording for the *Discovery* and *Clavius Base* patches). Luckily I came across both on a web site and was able to print them out. There are two small ones on the tops of the helmets, a large patch on the left arms and a couple of small ones on the backpacks/chest packs.

The Photographs

One of my main reasons for building these models was to photograph them in

scenes of the *TMA7* and astronauts. I built a small set with the walls of the pit being scanned from a photo and then printed out numerous times. *TMA7* was made from plastic card and the various bits and pieces lying around were from the spares box. The astronauts were the same model photographed from different angles and resized to the set. In *Photoshop* there is a filter called *lens flare* and, if you reduce the flare's size, it can emulate small lights. This trick was used to 'switch' on the arc lights with nine lens flares allocated to each. I set out to try and match the style of photography of the film as closely as practical, hence star backgrounds (in reality, stars are not visible in space if you are in 'daylight'), sun in shot and certain views of planetary objects.



sure enough of the interior of the helmet had been removed so that it would slip over the head. A curved piece of clear plastic was epoxied into the interior of the helmet. The rest of the kit was built as per the instructions, including the somewhat stilted stance. The chest pack is a bit on the small side and would really need to be scratchbuilt, but I stuck with it (I may replace it in the future).

I decided when I built the *Lunar astronaut* that I would change the position of the arms. These were duly broken at the elbows and repositioned. The fingers were closed by heating up the resin and carefully bending. Both the backpack and chestpack were over scaled but, luckily, I was able to reduce both in width and height by strategic cuts, sanding each of the pieces and glueing them back together. As I intended taking

simulated realistic settings. The spacecraft ones were relatively simple in that I photographed them against plain backgrounds, scanned the resultant slides into the computer and then manipulated the photographs by adding star and planet backgrounds. None of the models were manipulated with the exception of adding lit windows and, in the case of the *pod*, lit headlights. On occasion two models of differing scales were used and the relative sizes altered until the correct perspective was achieved.

I had only built one *Discovery* astronaut, i.e. *Dave Bowman* in his red spacesuit, but I decided I needed *Frank Poole's* yellow suit for a couple of shots of *Bowman's pod* rescuing *Poole* after *HAL* kills him. The change of colour was performed using *Adobe Photoshop*. *Photoshop* was also very useful in the

Lunar Models Web Site:
www.lunarmodels.com

Captain Cardboard Web Site:
members.aol.com/captboard

Tangents Web Site:
www.tangents-sf.com

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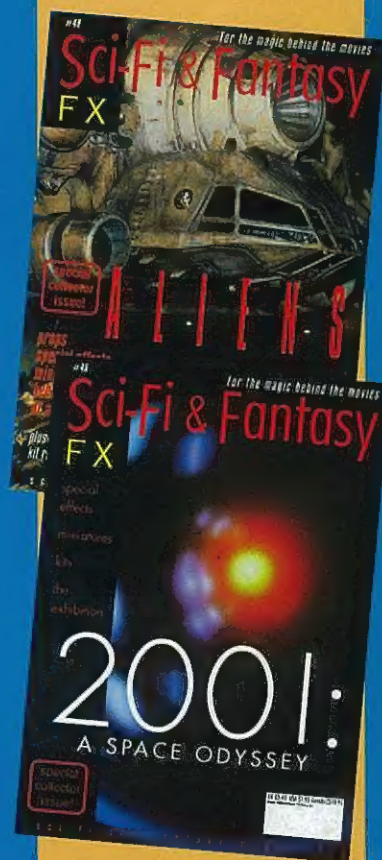
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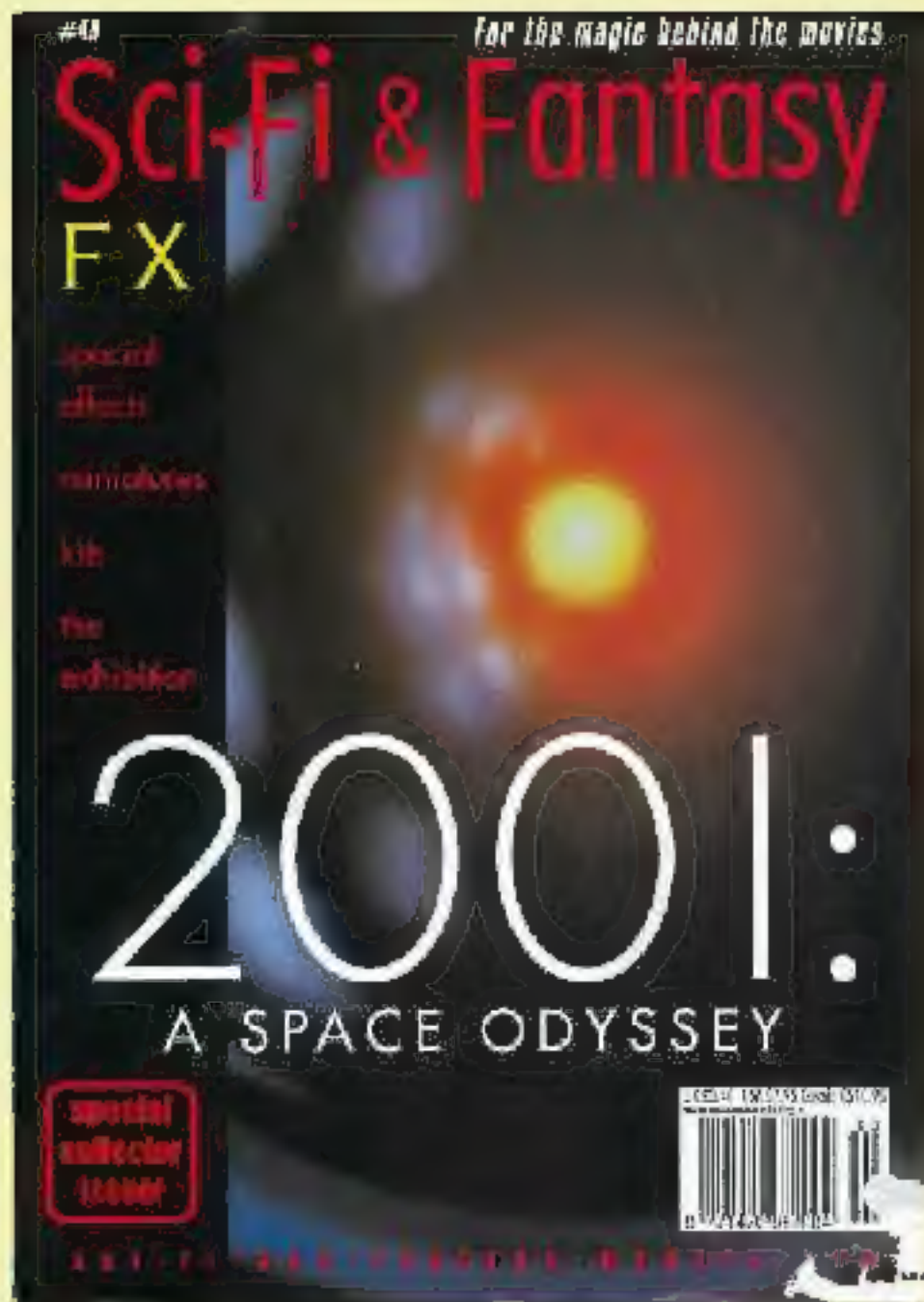


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